

INDIANA VOCATIONAL TECHNICAL COLLEGE

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GENERAL CATALOG 1970/71


INDIANA VOCATIONAL TECHNICAL COLLEGE



GENERAL CATALOG 1970-1971

CENTRAL OFFICES

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CONTENTS

Page	4	President's Welcome
	5	IVTC Board of Trustees
	6	Regional Technical Institutes
	8	General College Staff
	9	Regional Administrative Staffs
	12	Faculty
	16	IVTC Calendar 1970-71
	19	IVTC Philosophy

GENERAL INFORMATION

20	Expenses
21	Financial Assistance
23	Book Store
24	Housing and Transportation
24	Admission Requirements and Procedures
26	Evening College
26	College Credit
26	Transfer Credit
27	Counseling Service
29	Grading System
30	Advisory Committees
30	Curriculum and Graduation Requirements
32	Placement
32	Student Government
33	Recreation
33	Conduct

THE CURRICULA

36	One and Two-Year Technologies
55	Semi-Technical Programs
58	Part-Time Vocational Courses
59	Apprentice Programs
62	Programs of Study and Locations

COURSE DESCRIPTIONS

65	Course Listing
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INDEX



Welcome to Indiana Vocational Technical College—

As you read this catalog and as you become more familiar with our College, you will realize the uniqueness and relevancy of this Institution in preparing for the world in which we live.

The programs offered and their content have been developed by the faculty with the advice of committees composed of men and women who have demonstrated success in their respective fields. The faculty has been selected on the basis of their educational preparation, occupational experience, and their interest in teaching. Each is an expert in his field. A solid practical program of studies has been developed to give students an immediate "hands-on" experience in their chosen field in addition to an understanding of necessary theory and a well-balanced core of general education. You will discover IVTC to be a college devoted to occupational education with emphasis on the development of each individual student.

There is no greater pride that man can take than in the realization that he possesses knowledges and skills that are of value to society. This is the only source of true security.

Harry A. McGuff
President

BOARD OF TRUSTEES

FOUNDED 1963

CHAIRMAN OF BOARD

Dr. Montague M. Oliver

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St. Joseph's College
Calumet Campus
Gary, Indiana

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Indianapolis, Indiana

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and Evansville
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Vice President
Purdue National Bank
Lafayette, Indiana

Richard D. Wells

State Superintendent of Public Instruction
Indianapolis, Indiana

**INDIANA VOCATIONAL TECHNICAL COLLEGE
REGIONAL TECHNICAL INSTITUTES**

I Northwest Technical Institute

1440 East 35th Avenue
Gary, Indiana 46409
Telephone 219/887-9646

II St. Joseph Valley Technical Institute

1534 West Sample Street
South Bend, Indiana 46619
Telephone 219/289-7001

III Northeast Technical Institute

1711 Maumee Avenue
Fort Wayne, Indiana 46803
Telephone 219/742-1162

IV Tippewa Technical Institute

2316 South Street
Lafayette, Indiana 47904
Telephone 317/447-5061

V North Central Technical Institute

3717 South Reed Road
Kokomo, Indiana 46901
Telephone 317/453-5880

VI East Central Technical Institute

700 South Council Street
Muncie, Indiana 47305
Telephone 317/289-2291

VII Wabash Valley Technical Institute

Rural Route 22—Box 450
Terre Haute, Indiana 47802
Telephone 812/299-1121

VIII Mallory Technical Institute

1315 East Washington Street
Indianapolis, Indiana 46202
Telephone 317/632-8421

IX Whitewater Technical Institute

710 Northwest 5th Street
Richmond, Indiana 47374
Telephone 317/966-5944

X White River Valley Technical Institute

646 Franklin Street
Columbus, Indiana 47201
Telephone 812/372-9925

XI Ohio Valley Technical Institute

No site selected

XII Lincolnland Technical Institute

402 Court Street
Evansville, Indiana 47708
Telephone 812/425-4368

XIII George Rogers Clark Technical Institute

1611 East Oak Street
New Albany, Indiana 47150
Telephone 812/945-2643

STATE COLLEGE ADMINISTRATIVE OFFICE

Indiana Vocational Technical College
333 N. Pennsylvania Street
Indianapolis, Indiana 46204
Telephone 317/639-3363

GENERAL COLLEGE STAFF

OFFICERS

- Harry A. McGuff President
Indiana Central College, B.S.; Indiana
University, M.B.A.; Indiana University,
M.S.; Indiana University, D.B.A.
- James W. Commons Vice President of Administration
Marquette University, B.S.; Indiana University, J.D.
- William C. Jackson Vice President Special Services
Purdue University, B.S.
- Bruce V. Mitchell Dean of Technical Education
Indiana Central College, B.S.; Indiana University, M.B.A.
- Austell O. Sherard Dean of Vocational Education
South Carolina State College, B.S.;
Wayne State University, M.Ed.

ADMINISTRATION

- Gail E. Besket Research and Library Coordinator
Pennsylvania State University, B.A.;
University of Washington, M.L.S.
- John J. Birdcell Director of Research
Franklin College, A.B.; Indiana University, M.S.
- Donald H. Bryan Director of Student Personnel Services
Butler University, B.S., M.S.
- Albert P. Coffin Administrative Assistant to the President
U. S. Naval Academy, B.S.
- George N. Constantine Business Manager
Andrews University, A.B.
- Mary H. Hume Consultant, Health Occupations
Washburn University, A.B.; Wm. Voelker School of
Medical Technology, M.T. (ASCP)
- Graham M. LeStourgeon Director of Information Services
Louisiana State University, B.A.
- James P. Sperlik Accountant
Loras College, B.A.
- Terry Volpp Audio Visual Designer
Indiana Central College
- Stephen L. Weaver Asst. Director of Student Personnel
Services—Purdue University, B.A.; Ball State
University, M.A.

REGIONAL ADMINISTRATIVE STAFFS

REGION I

Northwest Region

- Ola P. Thorne Director
Indiana University, M. S.
- Herlindo Betancourt .. Assistant Director for Northwest Region
and Assistant Director for Instruction
Ball State University, M.S.
- George Herron Assistant Director for Lake County and
Assistant Director for Student Affairs
Indiana State University, M.S.
- Dan Leman Assistant Director for LaPorte County and
Assistant Director for Business Administration
Ball State University. B.S.

REGION II

St. Joseph Valley Region

- Richard M. Wysong Dean
Indiana State University, M.S.
- Eugene R. Glod Director of Student Affairs
University of Notre Dame, M.A.
- Veryl C. Stamm Director of Vocational and Technical
Education
University of Michigan, M.A.
- John E. Calvert Business Manager
University of Iowa, M.A.
- Gordon C. Kennedy Director of Continuing Education and
Community Relations
University of Notre Dame
- Clyde Remmo Supervisor of Manpower Development
Training Skill Center
Ball State University, M.A.
- Robert O. Baughman Chairman, Trade and Industry
Manchester College, B.A.
- Phyllis Bowers Registrar
- Dorothy Bupp Chairman, Health Sciences and
Elmhurst College, B.S. Practical Nursing
- John Hemphill MDTA Coordinator
Western Michigan University, M.A.

REGION III

Northeast Region

Mearle R. Donica Director
Indiana State University, B.S., Indiana University, M.S.
Merland Beyler Administrative Assistant
Purdue University, M.S.

REGION IV

Tippewa Region

Alton Potts Director
Ball State University, M.A.
Donald E. Huff Assistant Director
Purdue University, M.S.

REGION V

North Central Region

Harvey S. Poling, Jr. Director
Purdue University, M.S.
Charles J. Orem Director, Student Personnel Services
Purdue University, M.S.

REGION VI

East Central Region

Charles J. Faust Director
Ball State University, M.S.
James C. Stanley, Jr. Administrative Assistant
Indiana State University, B.S.

REGION VII

Wabash Valley Region

Richard Davidson Dean
Indiana State University, M.S.
Robert Williams Business Manager
Indiana State University, B.S.
Richard Nicosen Director, Continuing Education
Indiana State University, B.S.
Carroll Shaver Director of Admissions
University of Kentucky, M.A.
Charlyn Marshall Director of Education
Indiana State University, M.S.

REGION VIII

Mallory Division

- Warren F. Haas Dean
Purdue University, B.S.; Butler University, M.S.
- Robert E. Cochran Industrial Coordinator
Purdue University, M.S.
- Rolland G. Voris Director of Admissions
Indiana State University, M.S.
- William Garrett Director, Continuing Education
Indiana University, B.S.; Butler University, M.S.
- Gerald I. Lamkin Director, Technical Education
Indiana State University, M.A.

REGION IX

Whitewater Region

- Frank M. Pumerville Director
University of California, B.S.

REGION X

White River Valley Region

- M. Eugene Hall Director
University of California, B.A.; Ball State University, M.A.
- Thomesin Ellen Miskus Librarian
Indiana University, A.B.

REGION XII

Lincolnlnd Region

- George L. Utley Director
Eastern Kentucky University, B.S.; Indiana University,
M.S.
- William G. Wood Assistant Director
Western Kentucky University, B.S.

REGION XIII

George Rogers Clark Region

- Carl F. Scott Director
Purdue University, M.S.

FACULTY

Richard All	Graphic Arts
Indiana State University, M.S.	
Thomas L. Arch	Welding
Jimmie B. Beeler	General Studies
Indiana University, A.B.; Butler University, M.S.	
Grama K. Bhagavan	Technical Science
University of Notre Dame	
James A. Breen	Business
Illinois College of Optometry, O.D.	
Barbara E. Bruton	Health Sciences
Texas Woman's University, University of Houston, Hillcrest Memorial Hospital, R.T.	
Ransom E. Bryan	Electronics
Purdue University, Indiana Central College	
Charlotte A. Carley	Practical Nursing
Mercy College of Detroit, B.S.N.	
Evelyn M. Carlson	Health Sciences
Indiana Vocational Technical College, L.P.N.	
Meredith L. Carter	Data Processing
Butler University, M.S.	
Marian Chapman	Health Sciences
Loyola University School of Nursing, R.N.	
Wayne Clifton	Auto Body
Indiana State University, B.S.	
Dorothy L. Coe	Practical Nursing
Indiana University, B.S.	
Jayne Conner	Practical Nursing
Indiana State University School of Nursing, R.N.	
Dale L. Craft	General Studies
Purdue University, M.A.	
Eldon R. Crawford	Mathematics
Indiana State University, B.S.; Indiana University, M.S.	
Beverly A. Crenshaw	Health Sciences
University of Texas, B.A.; Texas Woman's University, M.A.	
Marvin L. Daugherty	Data Processing
Purdue University, Indiana Central College	
Louis H. Davis	Electronics
Indiana State University, B.S.	
Madlon Drayer	Health Sciences
St. Elizabeth Hospital School of Nursing, R.N.	

Beverly Jo Fordham Business
Brigham Young University, B.S.

Charles E. Fuller Electronics
Southern Illinois University, B.S.

Janet Geib Business
Ball State University, B.S.

Allan V. Gouker Electronics
Tri-State College, E.E.

Edward E. Harding Commercial Art
University of Michigan, M.S.

Imogene K. Harris Business
Southern University, B.S.

Norman W. Henry Data Processing

Jeanette E. Herr Health Sciences
Indiana University, R.T.

Marie S. Hoey Practical Nursing
St. Mary's of the Spring College, M.A.

Delores M. Holcomb General Studies
University of Notre Dame, M.A.

Arthur L. Horvath Apprentice Coordinator
Indiana University

Beverly J. Hoskins Practical Nursing
Purdue University, R.N.

Dawn Hotchkiss Practical Nursing
Indiana University, B.S.

Tom Jackson Welding

Helen R. Jacot Practical Nursing
Indiana University, R.N.

Sharon Jaggard Business
Indiana State University, B.S.

Amy O'Kara General Studies
Purdue University, B.A.

Gerald Keene Drafting
Indiana State University, B.S.

Merrill D. Kissick Business
Butler University, A.B.; Indiana University, M.S.

Deanna Klosinski Health Sciences
Indiana State University, B.S.

Ralph M. Lake General Studies
Ball State University, B.A.

Margaret E. Lambuth Practical Nursing
St. Elizabeth Hospital School of Nursing, R.N.

Susan Lapworth General Studies
Indiana State University, M.A.

Elizabeth J. Laws	Practical Nursing
St. Francis College, B.S.	
John T. Lee	Drafting
Ball State University, B.S.	
Kathleen Yoder Lin	Practical Nursing
Goshen College, B.S.	
Carman J. Linarello	Automotive Technology
Ball State University, B.S.	
Norma F. Martin	Practical Nursing
Eastern Mennonite College, B.S.N.	
Claude H. Matchette	Electronics
Purdue University, B.S.	
L. Edgar McNay	Electronics
Indiana University	
Marilyn B. McAdams	Practical Nursing
General Hospital School of Nursing, R.N.	
Virginia Melevage	Health Sciences and Practical Nursing
University of Chicago, M.A.	
William H. Meredith	Data Processing
LaSalle University	
Franklin E. Minion	Drafting
Eastern Michigan University, B.S.	
Hari Nebraj Mirchandani	Drafting
University of Bombay, India, B.S., B.E.	
Sophia E. Moore	Practical Nursing
Indiana University, M.S.	
John D. Montgomery	Data Processing
Indiana State University, M.S.	
Merrilyn M. Morgan	Health Sciences
Michigan State University, B.S.	
Dale Mowbray	Electronics
Chester A. Mullens	Drafting
Indiana University	
Mary J. Nicholas	Health Sciences
Indiana University, R.N.; University of Minnesota, B.S.	
John D. Pennington	Auto Body
Ann I. Pesoat	Commercial Art & Interior Design
University of Evansville, B.A.	
Maurice O. Pride	Drafting
Indiana State University, Purdue University	
Frederick C. Prohl	Electronics
Purdue University	
Thomas R. Rockwell	Culinary Arts

Robert W. Ruff	Drafting
Texas Christian University, B.D.	
Robert Ruhl	Drafting
Purdue University, B.S.	
Joseph E. Schultz	Commercial Art
Mary L. Seibert	Coordinator, Health Sciences
Indiana University, B.S.	
Ramona G. Simmons	Practical Nursing
St. Gabriel School of Nursing, R.N.	
James M. Simone	Data Processing
Northeastern University, Indiana University	
Ivan G. Smith	Auto Mechanics
Paul R. Smith	General Studies
University of Notre Dame, Ph.D.	
Robert L. Smith	Data Processing
Sidney C. Smith	Electronics
University of Evansville	
Louis W. Stanich	Drafting
San Diego State College, A.B.	
Alice J. Styborski	Practical Nursing
Indiana University, R.N.	
William C. Thompson	Business
Ball State University, M.A.	
Danny M. Tye	Electronics
Ball State University, M.S.	
Betty J. Vergon	Business
Raymond R. Vrydaughs	General Studies
University of Notre Dame, M.A.	
Ron Watts	Drafting
Arkansas Polytechnic College, B.S.; Purdue University, M.S.	
Julius Whitfield	Automotive Technology
Dorothy L. Wray	Health Sciences
Indiana University, A.B.	
Joseph Wrobel	Commercial Art
Indiana University	

NOTE: In addition to the full time faculty listed above, Indiana Vocational Technical College also employs many technically and professionally qualified faculty on a part time basis.

OFFICIAL COLLEGE CALENDAR—1970-1972

SUMMER QUARTER—1970

Summer Quarter Begins (New Student Orientation)	Mon	June	8	1970
Classes Begin	Tues	June	9	1970
Independence Day (No Classes In Session)	Sat	July	4	1970
Pre-Registration For Fall Quarter (5 Days)	Mon	Aug	17	1970-
	Fri	Aug	21	1970
Summer Quarter Ends	Fri	Aug	21	1970
Official Fall Registration (3 Days)	Mon	Aug	24	1970-
	Wed	Aug	26	1970
Late Fall Registration Ends	Fri	Sept	11	1970

FALL QUARTER—1970

Fall Quarter Begins (New Student Orientation)	Fri	Sept	4	1970
Labor Day (No Classes In Session)	Mon	Sept	7	1970
Classes Begin	Tues	Sept	8	1970
Pre-Registration For Winter Quarter (5 Days)	Mon	Nov	16	1970-
	Fri	Nov	20	1970
Fall Quarter Ends	Fri	Nov	20	1970
Official Winter Registration (3 Days)	Mon	Nov	23	1970
	Wed	Nov	25	1970
Late Winter Registration Ends	Fri	Dec	4	1970
Thanksgiving Vacation (No Classes In Session)	Thurs	Nov	26	1970-
	Fri	Nov	27	1970

WINTER QUARTER—1970-1971

Winter Quarter Begins (New Student Orientation)	Mon	Nov	30	1970
Classes Begin	Tues	Dec	1	1970
Christmas Vacation (No Classes In Session)				
School Closes End Of Day	Fri	Dec	18	1970
School Opens	Mon	Jan	4	1971
Pre-Registration For Spring Quarter (5 Days)	Mon	Feb	22	1971-
	Fri	Feb	26	1971
Winter Quarter Ends	Fri	Feb	26	1971
Official Spring Registration (3 Days)	Mon	March	1	1971-
	Wed	March	3	1971
Late Spring Registration Ends	Fri	March	12	1971

SPRING QUARTER—1971

Spring Quarter Begins (New Student Orientation)	Mon	March	8	1971
Classes Begin	Tues	March	9	1971
Spring Vacation (No Classes In Session)				
School Closes End Of Day	Fri	April	2	1971
School Opens	Mon	April	12	1971
Pre-Registration For Summer Quarter (5 Days)	Mon	May	24	1971-
	Fri	May	28	1971
Spring Quarter Ends	Fri	May	28	1971
Memorial Day (No Classes In Session)	Mon	May	31	1971
Official Summer Registration (3 Days)	Tues	June	1	1971-
	Thurs	June	3	1971
Late Summer Registration Ends	Fri	June	11	1971

SUMMER QUARTER—1971

Summer Quarter Begins (New Student Orientation)	Mon	June	7	1971
Classes Begin	Tues	June	8	1971
Independence Day (No Classes In Session)	Mon	July	5	1971
Pre-Registration For Fall Quarter (5 Days)	Mon	Aug	16	1971-
	Fri	Aug	20	1971
Summer Quarter Ends	Fri	Aug	20	1971
Official Fall Registration (3 Days)	Mon	Aug	23	1971-
	Wed	Aug	25	1971
Late Fall Registration Ends	Fri	Sept	10	1971

FALL QUARTER—1971

Fall Quarter Begins (New Student Orientation)	Fri	Sept	3	1971
Labor Day (No Classes In Session)	Mon	Sept	6	1971
Classes Begin	Tues	Sept	7	1971
Pre-Registration For Winter Quarter (5 Days)	Mon	Nov	15	1971-
	Fri	Nov	19	1971
Fall Quarter Ends	Fri	Nov	19	1971
Official Winter Registration (3 Days)	Mon	Nov	22	1971-
	Wed	Nov	24	1971
Late Winter Registration Ends	Fri	Dec	3	1971
Thanksgiving Vacation	Thurs	Nov	25	1971-
(No Classes In Session)	Fri	Nov	26	1971

WINTER QUARTER—1971-1972

Winter Quarter Begins (New Student Orientation)	Mon	Nov	29	1971
Classes Begin	Tues	Nov	30	1971

Christmas Vacation (No Classes In Session)				
School Closes End Of Day	Mon	Dec	20	1971
School Opens	Tues	Jan	4	1972
Pre-Registration For Spring Quarter	Mon	Feb	21	1972-
(5 Days)	Fri	Feb	25	1972
Winter Quarter Ends	Fri	Feb	25	1972
Official Spring Registration	Mon	Feb	28	1972-
(3 Days)	Wed	March	1	1972
Late Spring Registration Ends	Fri	March	10	1972

SPRING QUARTER—1972

Spring Quarter Begins	Mon	March	6	1972
(New Student Orientation)				
Classes Begin	Tues	March	7	1972
Spring Vacation (No Classes In Session)				
School Closes End Of Day	Fri	March	24	1972
School Opens	Mon	April	3	1972
Pre-Registration For Summer Quarter	Mon	May	22	1972-
(5 Days)	Fri	May	26	1972
Spring Quarter Ends	Fri	May	26	1972
Memorial Day (No Classes In Session)	Mon	May	29	1972
Official Summer Registration	Tues	May	30	1972-
(3 Days)	Thurs	June	1	1972

PHILOSOPHY

Indiana Vocational Technical College believes that each individual, regardless of economic or social status, should be provided the opportunity to develop to his and society's ultimate benefit. The College provides occupational education at its regional institutes which are located throughout the state so as to be of reasonable access to all citizens.

The College believes that occupational education is an increasing necessity for an ever-growing portion of the citizens of Indiana. IVTC reflects and complements the intent of the General Assembly of Indiana by providing occupational education resulting in definable job skills.

IVTC believes in general education integrated throughout the occupational curriculum. The general education core of studies is coordinated through several disciplines to lead the student toward self-awareness, toward a sense of social integration, and to recognition of his place in shaping society.

The College believes its students to be important functioning members of their communities and directs its programming to develop a spiritual and physical bond between students and society.

From this philosophical base, the following objectives are established for the Indiana Vocational Technical College system:

1. To meet the needs of the residents of the state for post-high school vocational and technical training and re-training.
2. To provide a community-oriented system of regional technical institutes emphasizing occupationally-oriented educational opportunities not available publicly or privately in sufficient numbers to meet the needs of residents and/or employers.
3. To offer (1) vocational and technical education programs that are occupationally oriented, and (2) general education programs necessary to complement the requirements of specific vocational and technical skills.
4. To ensure that acceptable skill and knowledge levels are attained by students certified as graduates of Indiana Vocational Technical College.

5. To develop an understanding and appreciation for occupational preparation and individual pride in the possession of such skills and knowledge.
6. To provide the opportunity to attain occupational competence compatible with the individual student's interests and abilities regardless of financial ability or previous education experiences.
7. To provide guidance, evaluation, counseling, and placement services for students to meet the needs for sound and practical occupational selection, preparation, and placement.

COLLEGE EXPENSES

fees

The Indiana Vocational Technical College seeks to provide quality training opportunities at the lowest possible cost. As a state assisted educational institution of Indiana, fees paid by the student cover only a minor part of the operating costs of the College and its regional institutes.

Free tuition is granted to all students who are residents of the State of Indiana. All non-resident students are required to pay a tuition fee in addition to the General Service Fee.

Schedule of Fees (Per Quarter)

Residents of Indiana

For 10 credit hours or more	
General fee	\$100
Lab fee where applicable	
For less than 10 credit hours	
General fee per credit hour	\$ 10
Lab fee where applicable	

Non-Residents of Indiana

For 10 credit hours or more	
Tuition	\$100
General fee	\$100
Lab fee where applicable	
For less than 10 credit hours	
General fee per credit hour	\$ 10
Tuition per credit hour	\$ 10
Lab fee where applicable	

withdrawals from college or courses

A student is not considered officially withdrawn until he has completed and filed the necessary withdrawal forms at the Admissions Office. Any withdrawal other than an official withdrawal does not permit the refund of any tuition or General Service Fee and may deprive the student of an opportunity to resume his education at a later date.

Any student who is dismissed for non-academic cause or misconduct shall not be entitled to any refund.

laboratory and breakage fees

Fees are determined on an individual laboratory basis for each course requiring such assignments. Monies derived from these fees are used to replace the special expendable supplies required in laboratory activities. The College charges no breakage fee or property damage fee to students, but in case of breakage due to gross negligence or maliciousness, the student shall be expected to reimburse the College. Credits may be withheld until proper payment is made.

student activity fee

A student activity fee will be charged each student. The proceeds of the fee will remain in the College and will be budgeted to support non-curricular educational and recreational activities. These activities include such functions as publications, speakers, special convocations, and various programs of recreation and entertainment including intramural sports.

All fees are payable at the time of official enrollment in the College and are subject to change by the College Board of Trustees at the beginning of any school quarter. If it becomes necessary to make such adjustments in fees, the College will attempt to give reasonable notice.

FINANCIAL ASSISTANCE

veterans and government agencies

Most regional institutes are approved for the training of persons eligible for benefits under the Veterans Administration, Social Security Administration and the Division of Vocational Rehabilitation of the State.

Every effort has been made in the construction of the College's training programs to meet the needs of veterans. The College is qualified and equipped to furnish education through the Veterans Administration to service-connected disabled veterans and children of veterans qualified under Veterans Administration regulations.

Additional information concerning these benefits is available at the Student Personnel Office or from offices of the above-named agencies.

veterans

The Indiana Vocational Technical College and its regional institutes have been approved for veteran training. A veteran enrolling in IVTC must make application for a certificate of eligibility directly to Veterans Administration Regional Office, 36 South Pennsylvania Street, Indianapolis, Indiana 46204. Local VA offices may be located near a regional institute where assistance may be obtained in making application.

Educational benefits for orphans of veterans and vocational rehabilitation of veterans are also processed by these VA offices. Certificates of eligibility must be received by the student before official enrollment is permitted. Applications for eligibility should be made with the VA office at least 30 days prior to the date the student is to enroll.

mdia students

For students enrolling under the sponsorship of the Manpower Development and Training Act, (MDTA) final approval from the local office of Indiana Employment Security Division as the authorizing agency must be received before final enrollment and class attendance may begin. Students seeking training under this program must make their application at least 30 days prior to the date the college quarter is to begin or the course is to start. An official college or regional institute application for admission must be submitted with the request for training to the local employment security office.

the work-study program

The Federal Work-Study Program, originally part of the Economic Opportunity Act of 1964, was in 1965 added to the Higher Education Act. Although preference is given to students from low income families, employment under this pro-

gram may be given to any student having financial need. Under this program, students work on campus or in the community performing jobs in the public interest. While they may work no more than fifteen (15) hours per week when school is in session, they may complete a regular forty (40) hour work week during vacation periods. To be eligible for the Work-Study Program a student must be accepted for enrollment as a full-time student.

guaranteed student loans

This loan program is designed to make it possible for students to borrow from private lenders to help pay educational costs. Up to \$1,500 per academic year may be borrowed (\$7,500 aggregate maximum) from eligible lenders. For a student whose adjusted family income is less than \$15,000 a year, the Federal Government will pay the lender the total interest due (up to seven percent) on the unpaid principal balance while the student is in school or during other periods of deferment. If a borrower dies or becomes permanently disabled, his loan will be cancelled.

Applications for loans may be obtained from banks, savings and loan associations, credit unions, pension funds, schools, colleges, insurance companies, and similar institutions which participate and qualify as eligible lenders. Students desiring loan assistance should contact their own lending institutions first. Loans are approved or denied at the discretion of the lender. State or private non-guarantee agencies, regional offices of the Office of Education, or school officials also will provide assistance.

BOOK STORE

A bookstore is maintained at each regional institute to make available the books and supplies needed by students. The bookstore will be open approximately one week prior to the opening of school and will remain open throughout the school year, including the summer quarter.

All books and regular supplies needed for training will be offered for sale at the bookstore. When special supplies are needed which are specifically related to laboratory requirements in a curriculum, they will be provided as a part of the laboratory fee.

HOUSING AND TRANSPORTATION

Arrangements for housing and transportation are the responsibility of the individual student. The student personnel office at the regional institutes will, however, assist students in obtaining adequate housing.

ADMISSION REQUIREMENTS AND PROCEDURES

The programs and courses offered by the Indiana Vocational Technical College are available to all persons, Indiana residents and non-residents, who have passed their 16th birthday. Some programs such as practical nursing have a minimum age requirement of 18.

campus visits

Campus visits are encouraged by the regional institutes. It is recommended that an initial visit to the prospective facility be made before an application is filed.

college year

The college year begins in September and continues through August. The 12 months are divided into four quarters, exclusive of holidays and vacations which correspond to those generally recognized by other state universities and colleges. It is possible to enter some programs at the beginning of the second, third, or fourth quarter. The Evening College operates on the same quarter plan and recognizes the same calendar for registration, holidays and vacations.

If the qualifications for admission are met, the student may be admitted to some courses up to the beginning of the second week of any quarter. When such admission is granted by a regional institute, the student will be required to pay the full fees for the quarter and will be required to meet the regular course requirements by special arrangements with each instructor to receive college credit.

admission requirements

Students seeking admission to the College must meet at least one of the following criteria:

1. Be a graduate of an accredited high school or a high school approved by the College.
2. Have successfully completed the high school equivalency examination.
3. Demonstrated an interest in and a need for occupational education as provided by the College.
4. Completed college entrance examination as prescribed by the College.

A prospective student is considered a resident of Indiana if he has resided within the state for a minimum period of six months and intends to continue in that residence.

The college admission policy makes provisions for admission of any person regardless of race, color or national origin, in accordance with Title VI, Civil Rights Acts of 1964 and operates in compliance with the law.

entrance procedure for full-time programs

1. Contact the regional institute for pre-enrollment or official application.
2. Complete the forms and return them to the regional institute.
3. Request high school registrar to mail an official transcript of credits to the regional institute. Official transcripts from any college or other post-high school institution previously attended must also be sent to the regional institute.
4. Take diagnostic aptitude and ability tests which are given at each regional institute. Notification of when tests will be given will be sent to applicants. Report for testing and personal interview at the appointed time and place.
5. Pay all fees or make final arrangements for paying fees at the time of official enrollment.
6. Provide evidence of acceptable physical condition from family physician

EVENING COLLEGE

Class offerings in the Evening College parallel those offered during the regular day program and will earn credit and may be used to meet the requirements for technical or semi-technical certification. Requirements for admission are:

1. Submission of a general admission form at the time of enrollment in classes.
2. Payment of fees.

Students who are working toward a specific curriculum or program certification should make provisions for regular admission to the College through the Admissions Office before they have completed the equivalent of one quarter's work or 15 credit hours.

COLLEGE CREDIT

College credit is measured in quarter hours. The quarter hours of credit for each course is indicated in Section III, Course Descriptions. In general, one quarter hour of credit is intended to represent one hour of classroom instruction per week for one quarter. (The college credit value applicable for laboratory work required in each course is based on a ratio of one credit hour for each two laboratory hours.)

For students devoting their full time to college pursuits, 12 to 18 credit hours per quarter constitutes a normal class load. A full-time student must carry an average of 15 credits per quarter to graduate at the end of a six quarter program. A student desiring to carry an overload must have demonstrated outstanding scholastic ability.

TRANSFER CREDIT

A student wishing to transfer from or receive credit for courses taken at another college, university or IVTC Regional institute, must complete an application for admission and forward an official transcript of work completed to the regional institute admissions office.

IVTC will accept transferred credit from other colleges or universities toward a degree or certificate for those courses which carry a grade of C or better and which satisfy curricular requirements.

advanced standing

Advanced standing toward graduation may be granted any student who:

1. Has successfully completed courses applicable to his program area in another college or university or at another college or university or at another IVTC regional institute, or
 2. Has completed courses offered by the Armed Forces Institute or other military service programs of study which are equivalent to course work offered by IVTC, or
 3. Qualifies by departmental examination and is recommended for advanced standing by the admissions office.
-

COUNSELING SERVICE

Counseling services are available at each regional institute. These services offer a wide range of educational and vocational aptitude tests for students. Counselors will also help acquaint students with the community and state agencies and other resources which may be useful to the students.

As a student progresses toward the completion of a training program, there may be occasions when counseling services will be desired. Students are required to maintain a cumulative grade point average of 2.0. All students are encouraged to contact a counselor or their faculty advisor at any time.

testing

Full-time students must take the Comparative Guidance and Placement Program (CGP) which is the official college entrance and placement test. The CGP is sponsored by the College Entrance Examination Board. The CGP program is designed to help every student, regardless of his academic, financial, or social status, identify his occupational desires

and abilities. The CGP will be administered monthly at each regional institute, and the fee per student is \$4.

In addition, special aptitude and proficiency tests are required in some occupational areas.

high school equivalency test program

The equivalency program makes it possible for an adult to take the General Educational Development Test (GED) to determine if he can score at the 12th grade completion level in English, mathematics, science and social studies. If an adult is able to make the necessary scores, he is then offered the equivalency certificate. Regional institutes refer the applicant to the nearest existing organization authorized to administer the tests. He must live in the state at least six months prior to making application for the examination. Should a person fail one or several parts of the five-part examination, he should then enroll in an approved GED refresher course so as to be adequately prepared to retake the necessary tests a minimum of six months later. The nearest regional institute in the college system may be contacted for more information about the equivalency test program.

tutorial assistance

Special courses and tutorial assistance are available to students who require aid in overcoming scholastic deficiencies.

GRADING SYSTEM

Scholastic standards are maintained at a high level. Grades will be mailed to the student's home address at the end of each quarter. The following system is used to evaluate student achievement in each subject:

GRADE	QUALITY	QUALITY POINTS*
		(Per Credit Hour)
A	Superior	4
B	Excellent	3
C	Good	2
D	Poor	1
F	Failing	0
X	No Fail	Not considered in establishing student's scholastic index
WP	Withdrawal (Passing Grade)	0
WF	Withdrawal (Failing Grade)	0
I	Incomplete	0
AUD	Audit	0

*For a student to determine his quality point ratio, it is computed by dividing the total quality points received by the sum of the total credits earned. For example: A student who has earned a total of 45 college credits with all grades of "B" has a 3.0 quality point ratio.

Students who complete a prescribed curriculum vocational-technical certification with a quality point ratio of 3.60 or better will be graduated "with high honors."

The student who earns a quality point ratio of 3.25 to 3.59 will be graduated "with honors."

FACULTY

A quality faculty serves at each regional institute. In faculty selection, considerable emphasis is placed on actual experience in the area of technical specialization as well as in their academic achievement. Primary consideration is placed on the instructor's ability to convey knowledge. Faculty members are expected to maintain their professional status by keeping informed on current trends in their fields.

RECOGNITION

Indiana Vocational Technical College confers two-year technical degrees and awards occupational certificates. The College is a member of the Indiana Conference for Higher Education, the American Association of Junior Colleges, the Indiana Association of College Admissions Counselors and the Indiana Student Financial Aid Association.

The College is approved for the education of veterans and orphans of deceased veterans who are eligible for educational benefits. The College is endorsed by the Rehabilitation Division of the State of Indiana.

Courses of study and curricula for each occupational area of concentration are approved where applicable by appropriate certifying agencies, as well as by business, labor and industrial organizations.

Additional information may be obtained at the admissions office of each regional institute.

ADVISORY COMMITTEES

The Indiana Vocational Technical College curriculum is developed with the assistance and advice of area employers. Through advisory committees composed of representatives of the various employing areas, the College is kept informed of the needs of such employers, the training, types of equipment and the performance standards needed.

Advisory committees represent business, industry, commerce, agriculture and government institutions.

The advisory committees insure that programs presented by the College are adequate, up to date, and complete and that students are well equipped with employable skills.

CURRICULUM AND GRADUATION REQUIREMENTS

In each regional institute of the College, the courses of study are offered to meet the specific employment needs of business and industry in that area, as well as throughout

Indiana, based on industrial growth, job potential and present and future employment needs.

To meet the general requirements of the College for graduation, the student must have a cumulative quality point ratio of at least 2.0 (average).

Candidates for graduation will be required to have earned at least one-half of the credit hours for a degree or certificate within the IVTC system. The final 15 credit hours must be earned within the College.

technical degree

To earn a technical degree, the student must complete a six-quarter program containing 90 quarter credit hours in an approved technical curriculum. Fifty credit hours must be earned in a technical area plus 15 credit hours in a technical related core. The balance of 25 credit hours must be earned in the general education core. Programs of study leading to a degree are listed in Section II.

semi-technical programs

Semi-technical course offerings are designed to assist employed, under-employed and unemployed workers and students either to increase or to update knowledge and skills used in present employment. These courses also provide an opportunity to learn new skills for better employment. Courses may vary in length and are scheduled upon request. Certificates are awarded for specific areas of specialization within a technical or occupational curriculum. The recipient may later apply credits earned toward a technical degree.

Among course offerings are classroom instruction and laboratory work in welding, bricklaying, blueprint reading, tool and die making, and similar courses which apprentices for skilled trades may need to meet the journeyman requirements. Formalized apprenticeship training is coordinated with local industry, trade unions and the College.

continuing education

Continuing education is offered by each regional institute. These courses are organized with the cooperation of industry and business to meet a specific need within the regional area. These courses do not conform necessarily to the regular college calendar and the starting and ending

dates are left to the discretion of each regional institute. Continuing education courses do not appear in the College catalog since they vary with local needs. Information regarding these continuing education courses is available at the admissions office of each institute.

These programs include courses of study which industry and business establish with the College and which provide for the student to alternate college attendance with work-related experiences.

PLACEMENT

The fundamental purpose of occupational education is to provide an opportunity for employment at a more skilled level and to provide an opportunity for advancement for those already employed. To assist in making good use of new skills developed at the College, an enthusiastic and active effort shall be made to place individuals in positions for which they have been trained. Contacts with major employers, arrangements for interviews, and liaison with Indiana Employment Security Division are provided through the job placement counselor at each regional institute.

SELECTIVE SERVICE

Full-time, draft-age students attending regional institutes generally have been assigned a deferred classification by their local Selective Service Board for the period of time they are enrolled. While indications are that the school will retain this status in the future, it should be noted that changes in manpower needs could affect the situation. Only a full-time student who maintains satisfactory grades may be eligible for a deferred classification.

STUDENT GOVERNMENT

The student has the opportunity to receive practical experience in responsible leadership through participation in extra-curricular programs such as the Student Government.

The principal objective of the Student Government is to provide a student voice in the management of student activities.

RECREATION

Students are encouraged to take part in activities, sports, clubs, and special events. Regional institutes generally have game rooms or lounges and snack bar areas. Some have formed intramural athletic leagues for basketball, bowling and softball.

CONDUCT

College students are considered to be mature men and women. Their conduct, both in school and out, is expected to be dignified and honorable. The responsibility for success rests largely on the shoulders of the individual student.

The administration does not set many rules of conduct. On the contrary, it is expected that students will consider they are living in a democratic situation and that the reputation of the institution rests on their shoulders. Common courtesy and cooperation at all times make conduct rules unnecessary.

The following resolution has been adopted by the College Board of Trustees:

WHEREAS the mission of the Indiana Vocational Technical College is to teach, conduct research and serve the public through the proper use of its facilities, and personnel and irresponsible acts of individuals may militate against the effective accomplishments of the college; and

WHEREAS the unreasoning acts of a few, whether they be students, faculty members, or outsiders not connected with the college, likewise militate against the effective pursuit of education by any student; and

WHEREAS the spirit of protest and independence that is normal in students, has in the present time been evidenced by excessive opposition to established principles of law and order, by abuse of personal freedoms, by misuse of the basic rights of free speech and by the use of displays of force;

The Board of Trustees of Indiana Vocational Technical College hereby resolves:

That all basic rights of free speech and independent action of individual citizens will be preserved so long as any exercise of such rights does not infringe upon the freedoms and rights of others.

That any grievance presented in a calm and reasonable manner will be given fair and thorough consideration by the respective administrations, including Regional Boards of Trustees, and just and impartial answer will be returned with the minimum delay.

HOWEVER, any person, student, faculty member, or employee of the College who takes part in any activity which interferes with other persons' lawful use of the property of the Indiana Vocational Technical College, and regional institutes, or who performs in such manner as to have the effect of denying or interfering with the lawful use of such property by others, will be requested to leave the premises of the College or its Regional Institutions, and

If any person, student, faculty member or employee of the College refuses to leave the premises of any property of the College, when so requested, regardless of reason, by any duly constituted official of the Indiana Vocational Technical College including its Regional Institutions, then proper law enforcement officials will be requested to arrest such persons as trespassers, and such persons will be subject to such disciplinary action by the College as the proper officials deem reasonable, including expulsion and/or termination of benefits and rights.

If any person or property is in danger of harm from any activities such as described above, that law enforcement officials will be requested to arrest such offenders and remove them from the premises.

This Resolution is hereby adopted and made a matter of corporate record, this 31st day of March, 1969.



THE CURRICULA

Indiana Vocational Technical College is committed to a relevant program of occupational education. To provide students with a foundation for living as productive members of the community, the College builds its programs to include a General Education Core. The intention of this general education is to broaden the student's educational base through the study of social sciences, mathematics and communications.

General Education Core

Course	Course Number	Credits
Fundamentals of Math	0317	5
Communications Skills I	0201	2
Communications Skills II	0202	2
Oral Communications	0211	2
Applied Psychology (or)	0751	3
Psychology (or)	0750	3
Sociology	0875	3
Human Relations	0755	3
Occupational Research	0725	2
Consumer Economics	0505	3
General Education Elective		3

Total requirement 25 credit hours

One And Two Year Curricula Leading To Employment

IVTC offers one and two-year specialized programs leading to positions in business and industry. Recognizing the current demand for skilled technicians, this college has designed its programs of study to provide opportunities for its students to master semi-professional, technical and semi-technical tasks in our modern technological society.

AGRICULTURAL TECHNOLOGY

Agricultural occupations, both technical and semi-technical, afford many opportunities for excellent employment. Increased specialization and mechanization in agriculture have fostered new occupations away from the farm as well as requiring the successful farmer to become an agricultural business manager.

The College offers training programs in the areas of agricultural management and the areas of specialization that perform specific services for the farmer.

In providing agriculture training, the curricula are constructed by advisory committees of agricultural representatives to assure that subjects covered and courses taught provide the students with experiences needed in their chosen occupation.

Agricultural Business Technician

DESCRIPTION

The two-year agricultural business course is designed to give the student a thorough understanding of business principles and procedures as they relate to agricultural products, services and supplies. An advisory committee from production agriculture, education and business helped establish the curriculum in order that the student will have a broad coverage in subject matter and be qualified to enter a number of different types of business. The course is well balanced with studies in human behavior, business techniques and agricultural procedures and processes.

Through lectures, the student is familiarized with accounting, record keeping, and budget making. In laboratory facilities, he studies agriculture as it is being practiced today. Through selected field trips, the student views modern agriculture and business at work.

Agriculture Business Technician (Technical Degree)

Six Quarters

Chemistry 0440	4	
*General Education Core	25	
Accounting 2201, 2202	8	
Business 2251, 2124, 3025	9	
Agriculture 1004, 1380, 1080,		
1205, 1105, 1202, 1387, 1388,		
1389, 1007, 1120, 1402	40	
Mathematics 0340	3	
General Education Elective	3	
	<hr/>	
	92	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Agricultural Equipment Technician

DESCRIPTION

The curriculum is designed for students to acquire knowledge, understanding and abilities needed in servicing, repairing, maintaining and demonstrating agricultural equipment. Effective communications skills and understanding of equip-

ment are stressed to aid students in preparing for positions in agricultural equipment manufacturing, selling and servicing. Related subjects are included to give the student a broad practical base for occupational specialization in this area.

Agriculture Equipment Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Agriculture and Related 1431, 1402, 6479, 1410, 1404, 1421, 1411, 1420, 1430, 1415, 1412, 1432, 1416, 1405, 1380, 1406, 1433	68	
	<hr/> 93	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Agriculture Clerk (Occupational Certificate)

Three Quarters

General Education 0201, 0202, 0211, 0505	9	
Agriculture and Related 1402, 1410, 1415, 1380, 1205, 1120, 1004, 1080, 1007	32	
Mathematics 0317	5	
	<hr/> 46	Quarter Credit Hours

Automotive Technician

DESCRIPTION

This curriculum is intended to give thorough preparation for entering the automotive service field. It includes a study of all types of current internal combustion engines and other vehicle equipment.

The student is given a thorough preparation in every aspect of automotive maintenance and repair, including the more specialized fields such as wheel alignment and balance, carburetion, ignition, tune-up procedures, brakes and front suspension.

The ever-increasing vehicle population and the constant improvements in modern cars and trucks require that automotive technicians or mechanics have the type of training which can be secured best in a well-equipped school. Both theoretical and practical training are given in all phases of automotive service and in the use of modern service tools and equipment.

Automotive Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Automotive and Related 6402		
6607, 6901, 6617, 6605,		
6479, 6615, 6801, 6611,		
6609, 6650, 6613, 6664,		
6662, 6640	60	
Physics 0450, 0451	8	
Mathematics 0341	5	
	<hr/>	
	96	Quarter
		Credit Hours

* The general education core is listed on page 36 of this catalog.

Automotive Mechanics or Auto Body (Occupational Certificate)

Three Quarters

These curricula are listed on pages 55 and 56 of this Catalog.

BUSINESS TECHNOLOGY

Business and office occupations are becoming more and more technical in nature. The introduction of sophisticated information-handling systems in modern offices has increased the demand for highly trained office technicians. In addition, the tremendous growth of American business in the past few years has created opportunities for skilled business and office personnel.

The technical and semi-technical programs in business at Indiana Vocational Technical College are designed to give the student those skills and knowledges necessary for entry into technical businesses and office occupations. The employer should need only to instruct and orient such a student in activities peculiar to the employer's particular office. Programs are also designed to give the student advanced training beyond that which is needed for job entry. This training enables the student to qualify for better positions with higher salaries and increases his opportunity for job advancement.

Business programs offered by Indiana Vocational Technical College include professional accounting, a combination of accounting and management, secretarial, and marketing. A description and general qualifications of each of these programs is prescribed here. Students should check with the Business Department for possible prerequisite course requirements.



Accounting Technician

DESCRIPTION

The accounting technician may establish and maintain a financial data processing system, interpret the results of recorded data to management, and assist in making management decisions based on these data. The accounting program is planned to provide learning experiences for the student in which he must perform progressively more difficult activities included in accounting procedures and the processing of financial data.

Accounting Technician (Technical Degree)

		Six Quarters
*General Education Core	25	
Accounting 2201, 2202, 2203, 2204, 2211, 2212, 2222, 2223, 2231	30	
Business 2281, 2282**, 6052, 2251, 2101**, 2124, 2125, 2301, 3011, 3012	29	
Economics 0500, 0501	6	
	<hr/> 90	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** Students may substitute a technical elective for Business 2282 and 2101 if approved by the department.

Accounting Clerical (Occupational Certificate)

		Three Quarters
General Education 0201, 0202, 0203, 0755, 0750	13	
Accounting 2201, 2202, 2203		
Business 2101, 2124, 2125, 2301, 2251	15	
Economics 0500, 0501	6	
	<hr/> 44	Quarter Credit Hours

Data Processing Technician

DESCRIPTION

This curriculum is designed to develop candidates for employment through training and experience to manage all operations of an electronic data processing section in modern business and industry. Emphasis will be placed on systems analysis and computer programming. In a two-year, or six-quarter, program, the student also will receive training in accounting procedures, communications, and supervisory skills which will be needed after graduation to fulfill his career objective.

The program of computer operations and machine operations emphasizes the actual operation of the equipment. Such skills as data systems development and elementary programming will be developed during a three-quarter college year. Courses taken within this curriculum will be transferable to the two-year program in data processing technology.

Data Processing Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Accounting 2201, 2202, 2203	12	
Business 2251	3	
Data Processing 2292, 2306, 2308, 2312, 2310, 2315, 2360, 2361, 2320	48	
General Education 0875	3	
**Data Processing Elective	3	
	<hr/>	
	94	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** 2311 is suggested as a Data Processing Elective.



Computer Operator (Occupational Certificate)

Three Quarters

General Education 0201, 0202, 0317, 0750	12	
Accounting 2201	4	
Data Processing 2306, 2307, 2308, 2309, 2292	29	
Data Processing Elective	3	
	<hr/> 48	Quarter Credit Hours

Management Technician

DESCRIPTION

This program is a combination study of accounting and management. It is based on the assumption that most people planning for leadership positions in business need a knowledge of accounting procedures. Supervisory and management personnel must often keep records, read and understand data in financial reports, and express future business plans in financial terms. The program is designed to develop these accounting abilities plus providing a better understanding of business organization, operations, procedures, and management skills and techniques.

Management Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Accounting 2201, 2202, 2203, 2204, 2211	20	
Business 0203, 2102**, 2124, 2125, 2221, 2251, 2281, 2282, 2255, 2271, 2301, 6001, 6052	37	
Economics 0500, 0501	6	
Business Elective	3	
	<hr/> 92	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** 2102 or Business Elective.

Marketing Technician, Industrial and Retail

DESCRIPTION

The curriculum for marketing technology emphasizes the sales aspects of product distribution. Background courses are taken in wholesaling and retailing, advertising, purchasing and sales management and business. Within the two-year, six-quarter curriculum are provisions for technical electives which permit the student to enhance his knowledge with regard to a specialized area of distribution.

Industrial Marketing (Technical Degree)

		Six Quarters
*General Education Core	25	
Accounting 2201, 2202	8	
Business 2301, 3005, 3025, 3100, 3440, 3026, 3441, 3442, 3007, 2281, 3050, 2255, 2271, 3020, 6001, 3011, 3012, 6012	57	
Economics 0500	3	
	<hr/> 93	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Retail Marketing (Technical Degree)

		Six Quarters
*General Education Core	25	
Accounting 2201, 2202	8	
Business 3005, 3025, 3440, 3026, 3441, 2301, 3100, 3442, 6001, 3007, 2281, 3019, 2271, 3020, 3015, 3011, 3102	54	
Business Elective	3	
	<hr/> 90	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Marketing Clerk (Occupational Certificate)

		Three Quarters
General Education 0201, 0202, 0211, 0317, 0505	14	
Accounting 2201, 2202	8	
Business 2301, 3005, 3025, 3100, 3440, 3441, 3442, 3026	27	
	<hr/> 49	Quarter Credit Hours

Secretarial Technician (Executive, Legal and Medical)

DESCRIPTION

The secretarial program is six college quarters in length and provides specialization in one of three major areas: Legal Secretary, Executive Secretary or Medical Secretary. Achievements in shorthand, typewriting and related skills are developed and mastered. In each of the three areas of specialization, the student will take supplemental courses which directly relate to the needs of the occupation.

The executive secretary program is supplemented with courses in accounting, business law, business mathematics and human relations.

The legal secretary program is supplemented with specialized courses in legal office procedures, legal records preparation, and basic law courses.

The medical secretary program is supplemented with courses in medical vocabulary, medical record keeping, and processing of related claim forms for medical insurance, life insurance, coroner reports, medicare records, etc.

Executive Secretarial (Technical Degree)

Six Quarters

*General Education Core	25	
**Clerical Business Core	28	
Business 2104, 2144, 3011, 3012, 3013, 3014, 2281, 2251, 2137, 2153	30	
Business Elective	3	
Mathematics 0352	4	
	<hr/> 90	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** The clerical business core is: Business 2101, 2102, 2135, 2141, 2142, 2143, 2124, 2152, 2301.

Legal Secretarial (Technical Degree)

Six Quarters

*General Education Core	25	
**Clerical Business Core	28	
Business 2139, 2144, 2251, 2271, 2281, 2283, 3011, 3012, 3013, 3014	30	
Mathematics 0352	4	
Business Elective	3	
	<hr/> 90	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** The clerical business core is: Business 2101, 2102, 2135, 2141, 2142, 2143, 2124, 2152, 2301.

Medical Secretarial (Technical Degree)

Six Quarters

*General Education Core	25	
**Clerical Business Core	28	
Business and Medical 4211, 2105, 2144, 2151, 2193, 3011, 3012, 3013, 3014	27	
Medical Science Electives	6	
Mathematics 0352	4	
	<hr/> 90	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** The clerical business core is: Business 2101, 2102, 2135, 2141, 2142, 2143, 2124, 2152, 2301.

Clerical Secretarial (Occupational Certificate)

Three Quarters

General Education 0203, 0755, 0750	13	
**Clerical Business Core	28	
Business Elective	3	
	<hr/>	
	44	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** The clerical business core is: Business 2101, 2102, 2135, 2141, 2142, 2143, 2124, 2152, 2301.

Commercial Art Technology

DESCRIPTION

The objective of this curriculum is to prepare men and women for employment as Commercial Artists in many types of businesses. These persons may be employed preparing art designs or illustrations for advertisers: television commercials, cartoons, industrial and advertising films; they may be involved in fashion illustration, packaging design, wallpaper and textile design, display, poster, and direct mail advertising, and window display for retail department stores. Many such artists are self-employed; others work for manufacturers, department stores, advertising agencies, television stations, sign shops, and newspapers.

Prior art training or experience is desirable, but not necessary, as long as the applicant displays evidence of art ability.

Transcripts of previous schooling are required prior to acceptance, and each student will be interviewed by the instructor. Portfolios of art achievement are helpful in evaluating qualifications.

Commercial Art Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Art and Related 6311, 6315, 6318, 6316, 6323, 6350, 6341, 6312, 6324, 6352, 6329, 6339, 6327, 6353, 6330, 6328, 6345, 6340, 6346, 6400, 0852	64	
Mathematics 0351	3	
	<hr/>	
	91	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Drafting and Design Technologies

DESCRIPTION

Program offerings include two curricula for becoming an Architectural or a Manufacturing Design Technician. Upon graduation from a two-year, six quarter curriculum in Drafting and Design Technology the student will have full qualifications for entering into these fields of employment.

Architectural Drafting Technician (Technical Degree)

Six Quarters

*General Education Core	26**	
Mathematics 0341, 0342	10	
**Physics 0451	4	
Business 2124	3	
Technical Design 6420, 6421, 6422, 6430, 6439, 6423, 6436, 6432, 6424, 6437, 6428, 6425, 6444, 6434	57	
	<hr/> 100	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** Physics I is required for 3 credit hour General Education elective.



Architectural Drafting Assistant (Occupational Certificate)

Four Quarters

General Education 0317, 0211, 0201	9	
Mathematics 0341, 0342	10	
Physics 0450	4	
Business 2124	3	
Technical Design, 6420, 6421, 6422, 6439, 6430, 6437, 6444, 6436, 6434	40	
	<hr/> 66	Quarter Credit Hours

Manufacturing Drafting Technician (Technical Degree)

Six Quarters

*General Education Core	26**	
Mathematics 0341, 0342	10	
**Physics 0451	4	
Business 2124	3	
Technical Design 6405, 6406, 6407, 6496, 6481, 6408, 6034, 6464, 6409, 6434, 6479, 6410, 6497	55	
	<hr/> 98	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** Physics I is required for 3 credit hour General Education elective.

Manufacturing Drafting Assistant (Occupational Certificate)

Four Quarters

General Education 0317, 0201, 0211	9	
Mathematics 0341, 0342	10	
Physics 0450	4	
Business 2124	3	
Technical Design 6405, 6406, 6407, 6408, 6464, 6034, 6481, 6479, 6434	40	
	<hr/> 66	Quarter Credit Hours

Electronics Technology

DESCRIPTION

The application of electronics is vast and the need for trained men to operate, maintain, research, and construct electronic equipment is becoming more critical each year.

The Electronics Technology Program is both theoretical and practical in nature. It is designed to train the student in skills and applications necessary to become members of design, production and maintenance teams in industry.

Electronics Technician (Technical Degree)

Six Quarters

*General Education Core	26**	
Electronics and Related		
6404, 6506, 6507, 6527, 6508,		
6509, 6528, 6512, 6529, 6513,		
6630	59	
Data Processing 2301	3	
Mathematics 0372, 0373	10	
	<hr/>	
	98	Quarter
		Credit Hours

* The general education core is listed on page 36 of this catalog.

** Physics I is required for 3 credit hour General Education elective.

Radio and Television Repairman (Occupational Certificate)

Three Quarters

This program is currently being developed.

Institutional Foods Management

DESCRIPTION

The entire program of institutional foods is developed in such a manner that the student actually participates in all phases of food preparation and serving. The program is designed to guide the student into supervisory positions in institutional food management.

The student studies all facets of food preparation and nutrition along with supervision and management techniques related to the food service industry.

Institutional Foods Management Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Nutrition 3550, 3551	4	
Culinary Arts 3560, 3561, 3500,		
3563, 3552, 3564, 3565, 3518,		
3566, 3524, 3567, 3568, 3569,		
3580, 3570, 3571, 3586	64	
	<hr/>	
	93	Quarter
		Credit Hours

* The general education core is listed on page 36 of this catalog.

Institutional Foods Service Assistant (Occupational Certificate)

Three Quarters

General Education 0317,		
0202, 0211	9	
General Education Elective	3	
Culinary Arts 3560, 3561, 3500,		
3562, 3518, 3563, 3552, 3564,		
3565	30	
Nutrition 3550, 3551	4	
	<hr/>	
	46	Quarter
		Credit Hours

Graphic Arts Technology

DESCRIPTION

This program provides the student with the knowledge and skills required to perform well in the graphic arts industry. Training is provided in most every process that reproduces information on paper and other materials.

Graphic Arts Technician (Technical Degree)

Six Quarters

*General Education Core	25	
Graphic Arts 6309, 6375, 6313, 6314, 6510, 6388, 6380, 6374, 6389, 6382, 6390	58	
Business 6052, 2101	5	
Math 0341, 0342	10	
	<hr/> 95	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Mechanical Engineering Technology

DESCRIPTION

The Mechanical Engineering Technician is oriented toward the vast industrial complex. This training program is designed toward a career opportunity as an engineering assistant or associate engineer. Environment conditions of industry are maintained as near as possible in training situations to assure that the skills taught are those which will provide the employees with immediate productivity at the time of employment. The student completing the program will be capable of troubleshooting and will be able to convert engineering theory into actual practice.

Mechanical Engineering Technician (Technical Degree)

*General Education Core	25	
Physics 0450, 0451	8	
Technical Engineering 6403, 6502, 6716, 6466, 6482, 6034, 6481, 6479, 6464, 6405, 6840, 6462, 6499, 6478	48	
Mathematics 0341, 0342	10	
Data Processing 2306	3	
	<hr/> 94	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

HEALTH OCCUPATIONS

The delivery of health services is one of the nation's fastest growing industries. In the United States, nearly three million men and women are currently employed in the Health Services. If the student's desire for employment is close to home or around the nation or the world, opportunities will be immediately available for those who prepare themselves for careers in a health service. Within the health occupations, rewarding careers as a Medical Laboratory Assistant, Medical Assistant, Practical Nurse, Operating Room Technician and Radiologic Technologist are immediately available for the well-trained candidate for employment.

Radiologic Technology

DESCRIPTION

Radiologic Technology is a two year program offered by the College as a cooperative educational institution affiliated with hospital-approved schools of Radiologic Technology accredited by the American Registry of Radiologic Technologists. This curriculum introduces the student to the principles of radiologic technique, exposure, therapy, positioning, protection, and ethics and is conducted with clinical practice and supplemental instruction in the accredited hospitals. The college confers a technical degree after an additional program of general studies.

All students admitted to the program of Radiologic Technology must be accepted by the approved schools of radiologic technology prior to their admission to class. General requirements are graduation from high school and an aptitude and sincere desire for a career in radiologic technology.

Radiologic Technologist (Technical Degree)

Nine Quarters

*General Education Core	25	
Health Science 4080, 4095, 4063, 4033, 4054, 4081, 4096, 4064, 4034, 4015, 4082, 4007, 4065, 4035, 4011, 4301, 4013, 4066, 4090, 4036, 4220, 4201**, 4210, 4010, 4020, 4005, 4004, 4030, 4014, 4040, 4050, 4060, 4031, 4041, 4051, 4061, 4032, 4042, 4052, 4062, 4033, 4053	76	
Microbiology 0406	2	
Mathematics 0310	2	
	<hr/>	
	105	Quarter Credit Hours

- * The general education core is listed on page 36 of this catalog.
** Health Science 4202 may be substituted for 4201 at the discretion of the Health Services Department.

Radiologic Technologist (Occupational Certificate)

Eight Quarters

General Education 0201, 0202, 0755, 0211, Elective	12	
Health Science 4080, 4095, 4063, 4033, 4054, 4081, 4096, 4064, 4034, 4015, 4082, 4007, 4065, 4035, 4011, 4301, 4013, 4066, 4090, 4036, 4220, 4210, 4201**, 4010, 4020, 4005, 4004, 4030, 4014, 4040, 4050, 4060, 4031, 4041, 4051, 4061, 4032, 4042, 4052, 4062, 4033, 4053	76	
Mathematics 0310	2	
Microbiology 0406	2	
	<hr/>	
	92	Quarter Credit Hours

- ** Health Science 4202 may be substituted for 4201 at the discretion of the Health Science Department.



Medical Lab Assistant and Medical Lab Technician

DESCRIPTION

The aim of the medical laboratory assistant program is to provide qualified men and women with an opportunity to prepare as safe and reliable functioning members of the laboratory team; specifically to perform routine laboratory tests under supervision. The one-year program encompasses a balance of theory, laboratory practice and clinic application. Standards for the laboratory assistant program have been established by the Committee on Certified Laboratory Assistants, approved by the Council on Medical Education of the American Medical Association. Students who satisfactorily complete the prescribed studies are eligible in the first year and expected to take the certified laboratory assistants' national examination. A satisfactory score on this examination entitles the graduate to use the title "Certified Laboratory Assistant" (CLA) after his name. The second year of the curriculum offers advanced clinical techniques and general education.

Medical Laboratory Technician (Technical Degree)

		Seven Quarters
*General Education Core	25	
Health Science 4210, 4220, 4201, 4310, 4311, 4320, 4312, 4321, 4313, 4322, 4314, 4315, 4316, 4323	53	
Mathematics 0310	2	
Microbiology 0406	2	
Chemistry 0440, 0441, 0445	12	
Data Processing 2301	3	
	<hr/> 97	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

Medical Laboratory Assistant (Occupational Certificate)

		Three Quarters
General Education 0755	3	
Health Science 4210, 4220, 4201, 4310, 4311, 4320, 4312, 4321, 4313, 4322	45	
Mathematics 0310	2	
	<hr/> 50	Quarter Credit Hours

Operating Room Technician

DESCRIPTION

This curriculum is designed to prepare the graduate to work as a member of the surgical team. The student studies anatomy and physiology, surgical anatomy, asptic technique and selected procedures. The program is fully approved by the Association of Operating Room Nurses, and graduates are qualified for the national examination for Operating Room Technicians.

Operating Room Technician (Occupational Certificate)

Four Quarters

General Education 0201, 0725, 0755, 0750	10	
Microbiology 0406	2	
Health Science 4220, 4710, 4202* 4210, 4220, 4710, 4711, 4720, 4730, 4721, 4731, 4722, 4732	38	
	<hr/> 50	Quarter Credit Hours

* Health Science 4201 may be substituted for 4202 at the discretion of the department. One credit hour is awarded for each six hours of clinical instruction per week.

Medical Assistant

DESCRIPTION

This curriculum is designed to offer an educational opportunity for individuals to develop the skills needed for employment as a medical assistant in a physician's office, clinic or health care agency. Courses are offered in anatomy and physiology, medical assisting techniques, as offices, clinics, and industry. Clinical experience is designed to offer the opportunity for practical applications of the educational programs.

Medical Assistant (Technical Degree)

Six Quarters

*General Education Core	25	
Microbiology 0406	2	
Mathematics 0310	2	
Business 2101**, 2102, 2201, 2135, 2193, 2155	29	
Data Processing 2301	3	
Health Science 4220, 4820, 4840, 4850, 4851, 4211, 4201***, 4210, 4808, 4230, 4520, 4852	33	
	<hr/> 97	Quarter Credit Hours

* The general education core is listed on page 36 of this catalog.

** Six credits of typing are required. Students with typing ability may enroll in Business 2102 and 2105 at the discretion of the business department.

*** Health Science 4202 may be substituted for 4201 at the discretion of the Health Science Department.

Medical Assistant (Occupational Certificate)

		Three Quarters
General Education 0201, 0202	4	
Microbiology 0406	2	
Mathematics 0310	2	
Business 2135, 2101**, 2102,		
2201, 2135	13	
Health Science 4201***, 4211, 4210,		
4220, 4820, 4840, 4850, 4851, 4852	28	
	<hr/> 49	Quarter Credit Hours

** Six credits of typing are required. Students with typing ability may enroll in Business 2102 and 2105 at the discretion of the Business Department.

*** Health Science 4202 may be substituted for 4201 at the discretion of the Health Sciences Department.

Practical Nursing

DESCRIPTION

This program is designed to meet the requirements of the Indiana State Board of Nurses' Registration and Education to prepare the candidate for licensure as a practical nurse in the state of Indiana. A licensed practical nurse works under the supervision of a physician or registered nurse in caring for patients, including medical and surgical patients, new-born and their mothers, convalescents, and the aged. This one-year program offers courses of studies in anatomy and physiology, nursing, skills, conditions of illness, nutrition and personal and community health. The student is expected to achieve satisfactory performance levels, as determined by the practical nursing department, in both the theoretical and clinical areas of the program.

Practical Nursing (Occupational Certificate)

		Four Quarters
*General Education	4	
Mathematics	2	
Microbiology 0406	2	
Health Sciences 4201**, 4301,		
4510, 4511, 4520, 4530, 4550,		
4220, 4820, 4840, 4850, 4851, 4852	28	
	<hr/> 60	Quarter Credit Hours

* Approved courses to satisfy General Education requirements are 0600, or Health Sciences 4210, 4220 at the discretion of the department.

** 4202 may be substituted for 4201 at the discretion of the department.

*** 4510 is credited with one quarter credit hour for each one and a half class hours of instruction per week.

Clinical experience in the practical nursing program receives one credit hour for each five class hours of clinical practice per week.

Inhalation Therapy Technician

A pilot program for Inhalation Therapy Technicians, three quarters in length, will be offered in Region IV, Tippewa Regional Institute, beginning in the Fall quarter, 1970.

SEMI-TECHNICAL PROGRAMS

Several semi-technical programs are offered on a full-time basis in various regional institutes. These programs are:

Auto Mechanics
Auto Body Repair
Welding
Machine Tool Repair
Tool and Die Machinist
Industrial Electricity

These programs may vary somewhat from region to region according to local industrial needs. Accordingly, course listing by quarters may be slightly different in the various regional institutes.

Automotive Mechanics (Semi-Technical)

DESCRIPTION

This program is geared to the needs of the automotive industry, and includes instruction in the use of up-to-date equipment and modern methods. The areas of instruction include fundamentals of automotive electricity, which are applied to the theory and operation of automotive charging and starting circuits, ignition systems, etc. The auto mechanic trainee will become familiar with the basic components of the automobile. Shop work on general service jobs is controlled to give the student a variety of learning experiences.

Auto Mechanic (Occupational Certificate)

	Three Quarters
General Education 0201, 0202, 0455	8
Mathematics 0301	2
Mechanics 6602, 6901, 6604, 6801, 6603, 6606, 6640	30
	<hr/> 40
	Quarter Credit Hours

Automobile Body Repairman (Semi-Technical)

DESCRIPTION

This curriculum is designed to give the student a thorough knowledge of auto body repairing and refinishing. This will consist of welding, straightening, panel installation, trim and glass work, refinishing, and estimating. The student will obtain the knowledge needed in a modern progressive body shop.

A student who successfully completes the program will be qualified to enter the field as a junior grade used car recon-ditioner, body repairman, or refinisher. He will be qualified to set up and maintain his own business after experience in a body repair shop.

Auto Body Repairman (Occupational Certificate)

		Three Quarters
General Education 0201, 0202, 0455	8	
Mathematics 0303	2	
Mechanics 6901, 6632, 6612, 6633, 6603, 6634, 6902	38	
	<hr/> 48	Quarter Credit Hours

Industrial Electrician (Semi-Technical)

DESCRIPTION

This program objective is to provide the student with a background in the subjects of industrial electricity. Material covered in the course includes the use of measuring devices, electronic circuits, resistance, Ohm's Law for direct and alternating current application, circuits, magnetism and electro-magnetism; meters, batteries and DC generators, inductance and capacitance. In addition, AC power systems, parallel circuits, rectification and detection, diodes and semi-conductor characteristics and curves.

Industrial Electrician (Occupational Certificate)

		Three Quarters
General Education 0201, 0317, 0850	9	
Electrical and Related 6505, 6404, 6514, 6540, 6542, 6515, 6541, 6543	35	
Mathematics 0341	5	
	<hr/> 49	Quarter Credit Hours

Machine Tool Repairman (Semi-Technical)

DESCRIPTION

The curriculum objective is to provide the student with a background in the subjects of machine repair and then a chance to apply these skills.

The great variety of equipment and machinery used throughout American industry is kept in good operating condition by industrial machine repairmen and often called maintenance mechanics. When breakdowns occur, repairmen determine the cause of the trouble and make the necessary repairs. They may completely or partly disassemble a machine in order to repair or replace defective parts. After the machine is reassembled, they make the necessary mechanical adjustments to insure its proper operation.

Much of a repairman's time is spent in preventive maintenance. By regularly inspecting the equipment, oiling and greasing machines, and cleaning and repairing parts, he prevents trouble which could cause breakdowns later. He also may keep maintenance records of the equipment he services.

Mechanical aptitude and manual dexterity are important qualifications for workers in this trade.

Machine Tool Repairman (Occupational Certificate)

General Education 0317, 0201, 0850	9	Three Quarters
Machine and Related 6401, 6010, 6802, 6851, 6411, 6852, 6860, 6865, 6803, 6853, 6861	39	
Mathematics 0304	3	
	51	Quarter Credit Hours

Tool and Die Machinist (Semi-Technical)

DESCRIPTION

The variety of types of employment one may seek in the machine tool industry indicates that there will be a substantial increase in the total number of positions available to machinists; however, the development of faster and more versatile automatic machine tools will limit the expansion of employment opportunities in some types of occupations traditionally open to machinists.

Prospective trainees should be mechanically inclined and suited to do highly accurate work that requires concentration as well as physical effort.

Tool and Die Machinist (Occupational Certificate)

		Three Quarters
General Education 0317, 0201, 0850	9	
Machine and Related 6401, 6010, 6802, 6851, 6411, 6881, 6412, 6882	32	
Mathematics 0304, 0305	6	
	<hr/> 47	Quarter Credit Hours

Welding (Semi-Technical)

DESCRIPTION

The objective of this curriculum is to prepare the student for entry into welding occupations. This program will give the student enough practice with industrial projects so that he should be highly competent upon successful completion of the program. The projects the student has will begin with the simple and in orderly fashion progress to the complex.

Welder (Occupational Certificate)

		Three Quarters
General Education 0201, 0202	4	
Welding and Related 6910, 6502, 6911, 6401, 6942, 6479, 6912	33	
Science 0455	4	
Mathematics 0308, 0309	4	
	<hr/> 45	Quarter Credit Hours

PART-TIME VOCATIONAL COURSES

These courses range from one to four quarters in length depending on skill level needed and ability of student.

vocational service trade programs

Admission Requirements

1. No application form required.
2. Minimum age is 16 years.
3. Register for classes.
4. Fees range from \$27.50 to \$55.00 payable at the time of registration.

Appliance Repair	Outboard Motor Service
Automatic Transmission	Small Gas Engines
Service	Upholstering
Custodial Service	Welding-Acetylene, Arc,
Key punch Operator Training	Tig & Mig
Oil Burner Service	Air Conditioning Service
Fluid Power	

These programs are offered at one or more of the following regions: Region II and Region VIII.

certified apprenticeship programs

The apprenticeship programs are offered in cooperation with the joint apprenticeship committees of the various contractors and unions.

Qualifications for apprenticeship generally are as follows: Applicants for apprenticeship must be at least 17 and not over 24 years of age, have a high school education or its equivalent and be in good health. (The Apprenticeship Committee has the authority to waive the maximum age limit in the case of honorably discharged veterans.) All applicants shall satisfy the Joint Apprenticeship Committee that they have the ability and aptitude to master the rudiments of the trade and have sufficient education to satisfactorily complete the required hours of related theoretical instruction.

The following information shall be submitted to the Joint Apprenticeship Committee by each applicant for apprenticeship:

- a. Application for apprenticeship made in writing to the Joint Apprenticeship Committee.
- b. Transcript of school courses and grades.
- c. Record of physical examination.

Applicants must be American citizens, or in the process of naturalization, physically able to perform the work required of the trade, and meet such other entrance qualifications as shall be established by the Joint Apprenticeship Committee.

Selection of apprentices for this program shall be made from qualified applicants on the basis of qualifications alone and without regard to race, creed, color, national origin, sex, or occupationally irrelevant physical requirements in accordance with objective standards which permit review, after full and fair opportunity for application, and this program shall be operated on a completely nondiscriminatory basis.

Following are apprenticeship programs offered at one or more of Regions II, III, VII and VIII:

Architectural Drafting	Lathers
Asbestos Workers and	Machine Repair
Frost Insulators	Millwright
Automatic Screw Machine	Painters
Automotive	Painting and Decorating
Bricklaying	Patternmakers
Carpentry	Plumbing
Electricians	Sheet Metal
Glaziers	Steamfitters
Industrial Electricians	Tool and Die
Ironworkers	





CONTINUING EDUCATION

The College, through the Regional Institutes, offers many courses in continuing education. These courses provide new knowledge or skills for individuals already engaged in a chosen field of endeavor on a project-type approach. The activities of this Division include short courses presented on an in-plant basis to meet the specific educational needs of a company.

A continuing education course can be any part or segment of any existing course or program or an entirely new course put together for a special need on a short term basis. For this reason, these courses do not carry college credit nor are they listed in the official college catalog. The individual institutes must be contacted for a listing of these courses or for special brochures describing individual courses.

FULL-TIME TWO-YEAR DEGREE PROGRAMS

TECHNOLOGY PROGRAMS											
GARY	SOUTH BEND	FT. WAYNE	LAFAYETTE	KOKOMO	MUNCIE	TERRE HAUTE	INDIANAPOLIS	RICHMOND	COLUMBUS	EVANSVILLE	
Accounting	x	x		x		x	x		x		
Architectural Drafting		x					x		x		
Automotive		x									
Commercial Art		x								x	
Institutional Foods Management		x									
Data Processing	x	x		x	x		x				
Electronics	x	x		x		x	x		x	x	
Engineering											
Graphic Arts						x					
Instrumentation										x	
Machine Drafting	x	x				x	x			x	
Management	x	x					x		x		
Manufacturing Design	x			x			x				
Marketing	x										
Mechanical Engineering		x								x	
Medical Assistant							x				
Medical Laboratory			x				x				
Radiology (X-Ray)							x				
Secretarial Science		x		x	x	x	x		x		

FULL-TIME ONE-YEAR PROGRAMS

SEMI-TECHNICAL PROGRAMS

Accounting Clerical	x	x	x	x		x		x		x		x	
Auto Body Repairman	x	x						x					
Automotive Mechanics	x	x				x				x			
Clerical—Secretarial		x	x	x					x		x		x
Computer Operator		x	x	x			x			x			
Diesel Mechanics									x				
Heating & Air Conditioning										x			
Industrial Electrician									x			x	
Marketing Clerk		x											
Machine Tool Repairman												x	
Mechanical Drafting Assistant			x				x				x		x
Medical Assistant	x	x								x			
Medical Laboratory Assistant		x		x							x		
Operating Room Technician	x	x		x								x	
Practical Nursing	x	x		x									x
Tool & Die Machinist												x	
Welding		x								x			

APPRENTICESHIP PROGRAMS *

SOUTH BEND

Architectural Drafting
Automatic Screw Machine
Auto Mechanic
Brickmason
Carpenter
Cement Mason
Electrician
Glazier
Ironworker
Industrial Electrician
Lather
Machine Repair
Millwright
Painters & Decorators
Patternmaker
Plasterer
Plumber & Pipefitter
Sheetmetal
Tool & Die

TERRE HAUTE

Brickmason
Carpenter
Electrician
Plumber
Steamfitter

INDIANAPOLIS

Asbestos Worker & Frost Ins.
Bricklaying
Carpenter
Industrial Apprentices
Lather
Painter & Decorator
Plumber
Sheet Metal
Steamfitter
Tool & Die

* Applications for Apprentice Programs must be made to the Joint Apprenticeship Committee.

COURSE DESCRIPTIONS

P 0101 Preparatory Communication Skills I No Credit

This introductory course consists of the study of the use of the English language through the media of grammar, composition, reading, speaking, and writing.

P 0104 Developmental Reading No Credit

This course includes intensive practice to improve concentration, rate of reading, comprehension, and retention of written material.

G 0201 Communication Skills I Two Credits

After individual testing to determine specific language needs, this course provides extensive training in basic writing, listening, thinking, reading and speaking. Special stress is put on the basic paragraph, clear description and use of logic.

G 0202 Communication Skills II Two Credits

A continuation of CS 1, this course provides intensive training in writing and in other means of communication.

G 0203 Business Communications Three Credits

Develops skills in techniques in writing business communications. Emphasis is placed on writing action-getting sales letters and prospectuses, business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry.

G 0211 Oral Communications Two Credits

This course presents intensive training in business, scientific and technical presentations. Training helps prepare students to advance to a responsible position within an organization.

M 0301 Mathematics for Automotive Mechanics Two Credits

Principles of arithmetic are reviewed and essential principles of algebra are taught. These principles are then used in solving problems in an auto machine shop. Systems of measurement, uses of various tables, gauges and their calibrations, the decimal system, fractions and angular measurement are stressed.

M 0303 Mathematics for Automotive Body I Two Credits

Principles of arithmetic are reviewed and essential principles of algebra are taught. These principles are then used in solving problems in an auto body shop. Systems of measurement, uses of various tables, gauges and their calibrations, the decimal system, fractions and angular measurement are stressed.

M 0304 Mathematics for Machinists I Three Credits

The basic principles of arithmetic are reviewed and basic principles of algebra are taught. Essential principles of geometry are taught. These various principles are then used in learning to solve problems encountered in a machine shop.

M 0305 Mathematics for Machinists II Three Credits

The basic ideas of algebra, geometry and trigonometry are reviewed or taught. Other topics covered with problems especially designed for the machine shop are strengths of material, work and power, tapers, speed ratios of pulleys and gears, screw threads, cutting speed and feed gears, and milling machine work.

M 0308 Mathematics for Welders I Two Credits

Principles of arithmetic are reviewed and typical welding shop problems are studied. Systems of measurement are stressed as are problems concerning temperature, caulking and fitting, pressure, material density and strength.

M 0309 Mathematics for Welders II Two Credits

The basic ideas of algebra and geometry are reviewed or taught. Topics covered include strengths of material, work and power, tapers, screw threads and gears.

M 0310 Applied Mathematics Two Credits

The purpose of this course is to supply an intensive review of basic arithmetic. Material reviewed includes fractions, decimals, percentage, ratio and proportion, and measurements.

**M 0316 Mathematics for Steamfitters
and Pipefitters Two Credits**

A review of arithmetic and algebra and introduction to applied geometry related to steamfitter and pipefitter problems.

M 0317 Fundamentals of Mathematics Five Credits

A brief review of fundamentals of arithmetic, introduction to algebra, including fundamental operations with positive and negative numbers; solution of linear equations, and basic geometric relationships.

M 0318 Practical Mathematics (Voc. Math I) Two Credits

Fundamental processes in arithmetic with emphasis on fractions and decimal numbers. Precision measurement with micrometer, verniers and level protractors, introduction to algebra.

M 0319 Vocational Mathematics II Two Credits

Elements of algebra including operations with positive and negative numbers, literal numbers, simple equations, ration and proportion, quadratic equations, applications to gear problems, indexing and slide rule.

M 0320 Vocational Mathematics III Two Credits

Elements of geometry; includes basic propositions of plane geometry related to triangles, polygons and circles and applications to practical problems.

M 0321 Vocational Mathematics IV Two Credits

Basic trigonometry including the trigonometric functions, use of tables and application to practical industrial problems.

M 0322 Vocational Mathematics V Two Credits

Application of algebra, geometry and trigonometry to practical industrial problems involving tool and die trades and design.

M 0335 Data Processing Mathematics Five Credits

Covers scientific notation and exponents, base systems, fundamentals of business math, algebra, modular arithmetic, Boolean algebra and logic.

**M 0341 Technical Mathematics I
(Applied Geometry) Five Credits**

Advanced topics in algebra and practical application of geometric principles to drafting, design and construction.

**M 0342 Technical Mathematics II
(Trigonometry) Five Credits**

Trigonometric ratios; solving problems with right triangles, using tables and interpolating, solution of oblique triangles using law of sines and law of cosines; graphs of trigonometric functions; inverse functions; trigonometric equations. All topics are applied to practical problems.

M 0348 Statistics**Three Credits**

A course in the organization and interpretation of statistical data; including frequency distributions, averages, graphic presentation, measures of dispersion, correlations, index numbers, analysis of time series including trends, and cycles and seasonal variation.

M 0351 Business Mathematics I**Five Credits**

This course stresses the fundamental operations and their applications to business problems. Topics covered include payrolls, price marking, interest and discount and commission.

M 0352 Business Mathematics II**Five Credits**

Includes units of instruction on taxes, annuities, amortization and sinking funds; depreciation, stocks and bonds, insurance (including life, annuities, etc.) and topics in business statistics.

M 0372 Mathematics IE**(Algebra and Trigonometry)****Five Credits**

Advanced algebraic and trigonometric topics including progressions, the binomial expansion, complex numbers, the solution of oblique triangles and graphs of trigonometric functions.

M 0373 Mathematics IIE (Calculus I)**Five Credits**

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed.

M 0406 Microbiology**Two Credits**

A study of microbiology with emphasis on the application of science to the problems of sterilization, growth conditions for micro organisms, infection, immunity, resistance, and isolation techniques. Laboratory exercises deal with bacteriological techniques and microscopy.

M 0440 General Chemistry I**Four Credits**

A study and practice of the fundamentals of inorganic chemistry including simple chemical arithmetic.

M 0441 General Chemistry II**Four Credits**

A continuation of the study of fundamental principles and theory plus the descriptive chemistry of some of the non-metals and an introduction to organic chemistry.

M 0445 Principles of Biochemistry **Four Credits**

An introductory course in the basic chemistry, properties, and metabolism of carbohydrates, lipids, proteins and nucleic acids.

M 0450 General Physics I **Four Credits**

Properties of matter and mechanics: Includes study of molecular theory of structure of matter, force, work, energy and power, force vectors, basic machines, friction, linear and rotary motion and power transmission.

M 0451 General Physics II **Four Credits**

Study of temperature, change of state, heat transfer, heat engines, refrigeration, air conditioning, wave motion, technical application of sound, illumination, and optical instruments.

M 0455 Physical Science I **Four Credits**

The introductory study of mechanics, heat, sound, light, magnetism, electricity.

G 0500 Economics I **Three Credits**

Macro economics: Analysis of national income accounts, the operation of the monetary and banking system and a survey of international economic problems. This course is designed to provide a comprehensive view of both theoretical and practical economic concepts.

G 0501 Economics II **Three Credits**

Micro economics: Economic analysis of pricing and output; the allocation of resources and distribution of income. This is primarily a study of economic principles at the industry level.

G 0505 Consumer Economics **Three Credits**

This course concerns economics from the standpoint of the consumer. Among the topics are included the role of the consumer in the economy, the cost of living and price levels, the factors affecting consumer choices, buying practices, management of personal and family finances, principles of buying, the role of government in consumer protection, and current consumer problems.

G 0600 Personal and Community Health **Two Credits**

A course presenting factors in individual family and community health.

G 0725 Occupational Research**Two Credits**

Career pursuits are investigated in the general area of study of the student's interest and enrollment. Study includes research of specific jobs or field opportunities. Activities include interviews, collection of occupational information, and field observations. An analysis is made of selected internal disciplines either through library research or field observations.

G 0750 General Psychology**Two Credits**

A study of psychological principles and methods. Emphasis is given to student demonstrations and experiments designed to show human behavior and the scientific method of investigation. Basic behavior influences such as personality, perception and self-concept are presented.

G 0751 Applied Psychology**Two Credits**

A description and analysis of the roles of labor and management is presented. Much time is devoted to labor-management reactions, including the evolution and growth of the American labor movement and the development and structure of American business management, communicative channels are also discussed and analyzed. The course also includes supervisory leadership in matters such as selection and training procedures, monotony and fatigue factors, turnover, accident prevention and human engineering.

G 0755 Human Relations**Three Credits**

This course is a survey of social sciences that help explain human behavior and motivation. Appropriate materials from psychology and sociology are used to discuss maturation, deviant behavior, culture and social problems. Such information is designed to help individuals better understand themselves and society.

G 0850 Introduction to the World of Work**Two Credits**

A study in the practical humanities under the coordination of the Student Personnel Services staff. Resource persons representing a variety of industrial and business organizations will participate in topics such as locating jobs, job applications and interviews, preparation of credentials, human relations, employer-employee expectations, personal grooming and appearance, labor laws, union membership, taxes, insurance, liability, trade and professional associations and organizations, occupational journals, further training, and job upgrading. The course is designed to equip the student for smooth transfer from training to the world of work.

G 0851 Personality Development **Two Credits**

Personality Development is a study of personal traits, habits, appearance, speech, etiquette, business ethics, telephone techniques, job applications, interviews and development of professional attitudes.

G 0852	Occupational Experience	Six Credits
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Occupational experience in structured environments, evaluation and counseling by faculty and cooperating employers. Portfolio preparation.

G 0875 Sociology Three Credits

This course is designed as a basic survey of sociology, the study of human social groups and how they interact to form cultures. Origins, developments, trends and problems of metropolitan cities are discussed to develop understanding of how the individual interacts with his society. The theme of the class is adjustment—to the person's social groups, to his family and to his city.

T 1004 Introduction to Agriculture Three Credits

A review of the functions of the agricultural manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the agricultural industry, price systems, Federal policies, international trade, and parity and economic growth which affect agricultural business.

T 1007 Agricultural Biochemistry **Four Credits**

Basic principles of chemistry to provide a foundation for courses in agronomy, soil science, and animal nutrition and an understanding of agricultural chemicals.

T 1080	Agricultural Marketing	Three Credits
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A study of the economic functions performed by various specialized marketing agencies. Emphasis on co-op marketing, institutional marketing and governmental marketing agencies.

T 1105 Animal Science **Five Credits**

An introductory animal science course covering the fundamental principles of livestock production. A study of the animal body and the basic principles of reproduction, genetics, growth, fattening, digestion, along with the selection, feeding, improvement, processing and marketing of livestock.

T 1120 Animal Diseases and Parasites Three Credits

A course dealing with the common diseases and parasites of animals; sanitation practices and procedures with emphasis on the cause, damage, symptoms, prevention and treatment of parasites and diseases, and management factors relating to disease and parasite prevention and control.

T 1202 Plant Science Five Credits

An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions and development of seed-bearing plants with application to certain commercially important plants in Indiana.

T 1205 Soil Science and Fertilizers Five Credits

A course dealing with basic principles of efficient classification, evaluation, and management of soils; care, cultivation and fertilization of the soil, and conservation of soil fertility.

T 1380 Farm Management and Accounts Three Credits

Selection of a farm, farm leasing, partnerships, use of credit and farm insurance. Includes simple farm accounting, use of accounts in farm business analysis and income tax reporting.

T 1387 Farm Management I Three Credits

Fundamentals of organization and operation of different types of farms, efficiency factors, important farm organizations and specific farm operations examined.

T 1388 Farm Management II Three Credits

A study of credit, insurance, legislation, income tax, and social security as they apply to the farmer.

T 1389 Farm Management III Three Credits

This course deals with the establishment of a total farm business.

T 1402 Farm Machinery I Four Credits

Basic mechanical principles of plows, planters, mowers, choppers, combines and other common farm machines. Principles of safety and study of machinery economics.

T 1404 Farm Machinery II**Four Credits**

A study of the operating principles of simple farm implements. The selection, field operation, maintenance and repair of basic farm machinery such as plows, disks, harrows, and cultivators. Includes principles of design and mechanics, power supply, hitching, and economics of farm machinery use.

T 1405 Farm Machinery III**Four Credits**

Care, repair, and selection of the larger units of farm equipment. Operating principles of self-propelled and tractor-drawn equipment will be studied in the classroom and the field.

T 1406 Farm Machinery IV**Four Credits**

Specialized equipment such as balers, combines, corn pickers, cotton pickers and peanut harvesters, will be included.

T 1410 Tractor Engines I**Three Credits**

Tractor engine fundamentals. Principles of engine operation, including horsepower calculations, efficiency, combustion theory, types of engines, cylinder and valve arrangements, lubrication, fuel and cooling systems. Laboratory work consisting of demonstrations, disassembly, inspection and reassembly of various engines.

T 1411 Tractor Engines II**Four Credits**

A study of tractor electrical systems, lubrication systems and lubricants.

T 1412 Tractor Engines III**Four Credits**

Theoretical and practical study in correlating previous instruction by putting into practice engine operation, tuning and adjusting, including troubleshooting. This is performed in conjunction with the latest diagnostic equipment.

T 1415 Agricultural Diesels I**Four Credits**

Basic agricultural diesel engine principles, engine structure study, relationship of parts, exhaust systems, and thermodynamics of combustion. Although the course will be primarily a study of all diesel engines, emphasis will be placed on those particular points of interest pertaining to farm diesels.

T 1416 Agricultural Diesels II

Four Credits

Disassembly and reassembly of laboratory engines including the inspection, diagnosis, repair and final assembly of these engines. Engines are to be run-in on a dynamometer. Includes a study of diesel fuel systems.

T 1420 Tractor Systems

Four Credits

A comprehensive study of present-day automatic transmission, braking and steering systems which are found on tractors.

T 1421 Tractor Hydraulic Systems

Four Credits

The principles of hydraulics and their application to farm machinery. Components of tractor hydraulic systems, testing, maintenance and repair of hydraulic systems.

T 1430 Parts and Service Management

Four Credits

A study of the principles, practices, and procedures in the efficient and profitable operation of the parts and service departments of a farm equipment retail business.

T 1431 Farm Shop

Three Credits

Development of skill, judgment and resourcefulness in the use of hand and power tools and welders for farm construction and repair, primarily in metal work.

T 1432 Occupational Experience I.

Six Credits

This course involves a cooperative position with an agriculture equipment company. This might be a manufacturer, distributor or a service firm for such equipment items as sprayers, pumps, livestock equipment or field equipment including harvest, planting, loading, or drying.

T 1433 Occupational Experience II

Six Credits

A continuation of T 1432 Occupational Training Experience I.

V 2101 Typing I

Three Credits

A course for beginners in typing. The development of fundamental touch typing techniques and skills and their application; including business letters, manuscripts, centering tabulation, machine parts and care, and speed development.

V 2102 Typing II**Three Credits**

Emphasis on production typing problems and speed building with attention to the development of the student's ability to function as an expert typist, producing mailable copies. The production units are tabulation, manuscript, correspondence, and business forms. Minimum speed of 50 net words per minute for five minutes.

V 2104 Executive Typing**Three Credits**

Stresses the improvement of production typewriting ability in business situations. Problem and production techniques will include complex tabulation, statistical reports, rough draft, manuscripts, and forms.

V 2105 Medical Typing**Three Credits**

Stresses the improvement of production typewriting ability with medical terminology. Problem and production techniques will include complex tabulation, statistical reports, rough draft, manuscripts, and forms.

V 2106 Legal Typing**Three Credits**

Stresses the improvement of production typewriting ability with legal terminology. Problem and production techniques will include complex tabulation, statistical reports, rough draft, manuscripts, and forms.

V 2124 Office Calculating Machines**Three Credits**

A course designed for college-level students interested in acquiring competence in the basic operations of adding and calculating machines representative of machines commonly used in American offices.

V 2125 Business Machines Applications**Two Credits**

A follow-up course for Office Calculating Machines which provides the student with training in solving the kinds of calculating problems he may encounter in business.

**V 2135 Production Typing and
Machine Transcription****Three Credits**

A laboratory course where students will transcribe machine-recorded dictation. Material will be progressively difficult with the objective of

equipping students with a high degree of skill at transcribing all types of machine-recorded dictation. Correct use of grammar, spelling and letter format will be stressed along with the development of a high degree of productivity.

T 2137 Technical Dictation and Transcription Three Credits

Development of ability to write new-matter dictation, improvement of transcription techniques and skill, introduction to specialized vocabularies, with increased emphasis on speed and accuracy.

V 2139 Legal Dictation and Transcription Three Credits

Review of shorthand theory and specialized vocabulary development in the legal field.

V 2141 Shorthand I Three Credits

Introductory course in shorthand. Complete shorthand theory presented with emphasis upon reading and writing accurately with correct techniques. Introduction to transcribing techniques. Students will be expected to reach a writing speed of 60-80 words per minute on practice material.

V 2142 Shorthand II Three Credits

Increased emphasis in writing and transcribing dictated subject matter. Development of skill in formulating new outlines in accordance with the basic principles of Gregg shorthand. Extension of transcription techniques and practice. Essentials of good English principles stressed. Students are expected to reach a speed of 80-100 words per minute.

V 2143 Shorthand III Three Credits

Introduction to new matter dictation. Essentials of good English principles stressed. Students are expected to reach a speed of 100-120 words per minute.

V 2144 Shorthand IV Three Credits

Advanced dictation and new matter improvement. Introduction to specialized vocabularies with increased emphasis on accuracy and speed.

T 2151 Medical Filing and Indexing Three Credits

A study of medical terminology and coding systems and methods of filing and indexing medical information.

V 2152 Office Practice**Four Credits**

A finishing course emphasizing the skills, techniques and attitudes businessmen desire in office workers; including units of instruction in human relations, office machines, business correspondence, mailing, filing, sales department functions, telephoning, purchasing department functions, personnel department functions, and finding employment. Laboratory experience in applying skills and knowledges gained in previous business courses will be provided.

V 2153 Office Management and Procedures Three Credits

A course emphasizing management skills and techniques of business offices. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.

**T 2155 Medical Office Management
and Insurance****Three Credits**

This course supplies the background for organization and management of a physician's office and introduces the student to governmental and individual types of health insurance coverage.

T 2193 Medical Dictation and Transcription Three Credits

Course in the machine method of taking dictation. Emphasis is on the basic principles and theory of stenography stressing vocabulary building and machine transcription of medical records.

T 2201 Accounting I**Four Credits**

A comprehensive introduction to the fundamental principles of accounting as applied to the sole proprietor, including: meaning and purpose of accounting, theory of debits and credits, journals, posting, accounts trial balance and financial statements.

T 2202 Accounting II**Four Credits**

Continuation of Accounting I emphasizing partnership accounting; including: surplus, dividends, stock and bonds, departmental accounting, manufacturing accounting, budget analysis, interpretation of financial statements and supplementary statements.

T 2203 Accounting III**Four Credits**

A review of the accounting process and records, and the nature and content of accounting statements. Further development of skill and knowledge of accounting, including: analysis of working capital, analysis and methods of valuation, and statement presentation of the following items: cash and temporary investments, receivables, inventories, current liabilities, investments, plant and equipment, intangible assets, deferred charges and corporated capital stock.

T 2204 Accounting IV**Four Credits**

Advanced accounting principles dealing with partnerships, ventures, consignments, installment sales, statement of affairs, realization and liquidation reports, parent and subsidiary accounting, cost method of parent accounting, estates and trusts. Includes also an introduction to governmental and institutional accounting.

T 2211 Cost Accounting I**Four Credits**

A study of job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control, labor control and report forms.

T 2212 Cost Accounting II**Four Credits**

A study of process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.

T 2221 Federal Taxation**Three Credits**

A study of the Federal Income Tax from both a managerial and an accounting viewpoint.

T 2222 Income Tax I**Three Credits**

A study of the accounting procedure and problems connected with the Federal Income Tax Law and State Laws for individuals, proprietorships and partnerships.

T 2223 Income Tax II**Three Credits**

A study of the accounting procedure and problems connected with the Federal Income Tax Law and State Laws for corporations, estates, and trusts.

T 2231 Auditing**Three Credits**

Public accounting organization and operation is studied, including internal control, internal auditing, verification of the balance sheet and operating accounts and the auditor's report of opinion.

T 2241 Personal Finance**Three Credits**

Personal Finance is designed to assist in planning of personal expenditures, borrowing, budgeting, consumer buying, insurance, taxes, building estates, wills, savings and using financial institutions.

T 2242 Records Management**Two Credits**

This course is designed to give the student a general background in the management of coding and filing systems, indexing systems, budget systems, and inventory systems.

T 2251 Business Principles and Organization Three Credits

An introductory study and analysis of our business system as a whole and in relation to our economic society. A survey of business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

T 2255 Introduction to Management**Three Credits**

This course includes basic principles of management as applied to retailing, wholesaling, internal organization, distribution, and financing. The course deals with the theory and practice of leadership. Some emphasis is placed on problem solving, decision making, creativity and leadership philosophy.

T 2271 Risk and Insurance**Three Credits**

The various types of insurance, including life, health and accident, hospitalization, fire and storm, burglary, liability, automobile, marine, types of insurance companies, types of coverage, problems, government regulations, are covered in this course. An introductory course for further study in a specialized field.

T 2281 Business Law I **Three Credits**

This course includes the study of contracts, negotiable instruments, and sales of property. Legal situations encountered in the performance or breach of a contract, securing of credit, and problems met when marketing goods.

T 2282 Business Law II **Three Credits**

A continuation of Business Law I with stress on topics which include agency, partnerships, and corporations. Concentration is on the relationships of principles, agents, and third parties.

T 2283 Criminal Law **Three Credits**

A survey of the basic principles of criminal law and their application to individuals, including torts, petty, and grand larceny and homicide.

T 2292 Field Project and/or Case Study **Five Credits**

The student will be given a special project or case study specifically related to the occupational area. The course could be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

V 2301 Introduction to Data Processing **Three Credits**

The history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

**V 2306 Introduction to Data Processing
and Programming** **Six Credits**

This course is designed to give a general introduction to acquaint the students with the development of basic computer systems and provide a foundation for detailed study of specific systems. Topics include historical points, computer codes, core storage, disk, drum, and other random access systems; central processing unit, fixed and variable word length computers, input-output devices, stored program concepts, and programming systems.

V 2307 Computer Operations **Six Credits**

The student will learn actual computer operations; he becomes proficient in handling and setting up complex disk and tape file runs. He will learn to run book and message control functions and will learn to read job descriptions and flow charts.

V 2308 Computer Programming I**Six Credits**

Writing, testing, debugging and documentation of computer programs. Extensive laboratory experience to build the confidence of the student to perform the problems presented.

V 2309 Computer Operator Techniques

This course will place emphasis on developing and understanding of systems, computer operations, and operating systems necessary for operations work in data processing centers in business and industry. Extensive use will be made of typical case problems.

V 2310 Computer Programming II**Six Credits**

Students will develop skills writing more complex programs and learning special techniques involving multiple level control breaks, multiple record input, arithmetic calculations, balancing methods and general data processing business procedures.

V 2311 Principles of Unit Record Systems**Three Credits**

Detailed work in punched card data processing. Topics include wiring and operation of basic card machines, use of card-oriented systems, card design and layout, punched card machine functions, level breaks, and procedure development.

T 2312 Logic Development**Five Credits**

Covering such topics as number systems, flow chart development, computer-related mathematics, logic and sets.

T 2315 Computer Programming III**Five Credits**

Continuation of Programming II, with emphasis on program optimization and multi-file techniques. Programs of some complexity will be written, compiled, and executed by the students.

T 2320 Computer Programming IV**Five Credits**

The student will be required to write and test the most sophisticated job runs permissible on the type equipment available. This will be done using the highest level languages available. Use will be made of vendor utility routines such as sorts, file organization; also, use of an operating system if available.

T 2360 Systems Analysis and Design I**Five Credits**

Functions and techniques of systems analysis, design, and development. Topics include system flow charting, data collection techniques, file design and management determination of processing and

equipment requirements, and communication and reporting methods. Typical business information problems will be examined using case studies.

T 2361 Systems Analysis and Design II Five Credits

Advanced concepts in management information systems. The study of systems applications, data capture equipment, teleprocessing equipment, time-sharing systems, and total integrated information systems concepts.

T 3005 Principles of Retailing Three Credits

Topics covered are business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking, and marketing merchandise, retail store promotions, pricing, retail store services, and trends in marketing.

T 3007 Principles of Wholesaling Three Credits

This is an advanced study of the evolution, economic status, and management of non-retail marketing; the position of wholesaling in distribution; kinds of wholesaling, types of middlemen, internal organization and operation of wholesalers, trading areas; and an advanced analysis of the relationship between marketing policies of wholesaler and manufacturer and changing patterns of wholesale distribution.

V 3011 Occupational Experience I Five Credits

The student is placed in an occupational position on a cooperative basis either in business, industry or at the school. The experience will be related closely to his occupational study area.

V 3012 Occupational Experience Seminar I One Credit

A one hour per week class to enable the student to discuss the occupational experiences with the instructor, ironing out problems and discussing progress.

V 3013 Occupational Experience II Five Credits

A continuation of Occupational Experience I. (V 3011)

V 3014 Occupational Experience Seminar II One Credit

A continuation of Occupational Experience Seminar I. (V 3012)

T 3015 Small Store Management **Three Credits**

Includes principles of operation and management applicable to small stores. Special attention is paid to investigating business opportunities, organizing, financing, and controlling small business. Group projects are investigated by students in areas such as financing, incorporating, and obtaining legal advice.

T 3019 Merchandise Buying **Three Credits**

Analysis is made of the principles and methods that determine successful merchandise selection. Included in the study are organizations for buying, knowing what to buy, determining where and how to buy, and the aspects of merchandising involved in selling.

T 3020 Credit Procedures **Three Credits**

Principles and methods of credit administration in the mercantile and retail field, including sources of information, credit policy, credit control, legal remedies, and collection techniques are covered.

T 3025 Salesmanship I **Three Credits**

Salesmanship deals with the principles of selling in retail and wholesale businesses. Steps in the sale, rules of selling, prospective problems, attitude of buyer and salesman, the interview, methods of closing the sale, and types of customers are topics given attention.

T 3026 Salesmanship II **Three Credits**

A survey course of sales and the techniques of selling a service. Equal stress is placed on selling the product as well as selling the service. The course covers all phases of the sales including approach, demonstration, close and departure. A short selection is given on development of the personality and the art of selling one's self.

T 3050 Principles of Purchasing **Three Credits**

The organization and operation of a purchasing department; policies dealing with inventory control, vendor relations, purchasing responsibilities, evaluation of suppliers, source selection, value techniques, standardization, scrap disposal, contract legalities and negotiations. Lease or buy considerations are studied in conjunction with capital equipment acquisitions.

T 3100 Principles of Advertising**Three Credits**

The purposes of advertising, the economic and social aspects of advertising, slogans, trademarks, idea visualization, the mechanical production of advertisements, the media plan, newspaper advertising, radio advertising, television advertising, direct mail advertising, outdoor advertising, packaging and labeling, and the advertising campaign will be covered.

T 3102 Display Advertising**Three Credits**

A practical applications course in the field of advertising and display; including: Scope and purpose of advertising, measurement of effectiveness, advertising media, costs, circulation data, schedules, cycles, layout, packaging, agencies, advertising laws, elements and principles of display, counters, showcases, lettering, etc.

T 3440 Marketing I**Four Credits**

This course is an introduction to the problems of manufacturers, wholesalers, and retailers as they relate to marketing goods and services. Attention is paid to channels of distribution.

T 3441 Marketing II**Four Credits**

A continuation of Marketing I (T 3440). Types of business enterprises, how to enter business, competition, pricing market research, credit policies, and management techniques are discussed.

T 3442 Marketing III**Four Credits**

This portion of marketing considers the distributive structure, the pricing system, promotional activities, and planning and evaluating of the marketing effort.

T 3500 Introduction to Hospitality Careers**One Credit**

A study of the hospitality field, its history, famous people and the socio-economic importance of its operation. In this survey course, the student is provided with a general understanding of organizational structures and its component services for successful management of hotels, motels and restaurants.

T 3518 Menu Planning**Two Credits**

The student plans and studies menu layout, design and adapting the menu to the cultural background of the location and clientele.

Professional planning will be emphasized. Nutrition balancing, cyclic and static menu uses, "specials," and "loss leader" items will be covered, in addition to consumer menu pricing.

T 3524 Dining Room Procedures

Two Credits

This course provides the student with methods of the American and European Plan. Table arrangement for all types of functions is studied in addition to waiter-waitress protocol. The more formalized French silver service, continental buffet and white glove occasions are also included.

T 3550 Nutrition I

Two Credits

A basic course in nutrition which covers the following topics: Determination of individual requirements for energy protein, minerals, and vitamins; foods as a source of daily requirements; and the relationship of food and nutrition to optimal physical fitness.

T 3551 Nutrition II

Two Credits

A continuation of T 3550.

T 3552 Volume Food Management

Three Credits

An introduction to the various types of large volume food service institutions, with emphasis on operational differences, varied menu construction, raw material estimates, large volume preparation techniques, and the use of institutional food service equipment. Requirements for the refrigerating of all perishable food and the mechanics for requisitioning and controlling volume purchases are taught.

T 3560 Culinary Arts I

Three Credits

Sanitation and personal hygiene rules and practices are a part of the student's learning throughout training. Rules in strict accordance with local and state Board of Health regulations are taught. Sanitation requirements for the refrigerating of all perishable foods and the mechanics for receiving and issuing requisitions and controls are taught as are inventory control methods.

T 3561 Advanced Culinary Arts I

Five Credits

A continuation of course T 3560 for students specializing in culinary arts as a cook, baker or chef.

T 3562 Culinary Arts II**Three Credits**

Learning experiences are in the basic fundamental preparation of rolls and bread. The student is taught to prepare such desserts as tortes, cakes, fruit, chiffon, cream, soft and specialty pies, cookies and puff pastry deserts. Included also is the actual baking and preparation of quick breads, such a biscuits, corn bread and muffins. Attention is paid to the care, sanitation and maintenance of equipment involved in the cooking of these foods.

T 3563 Advanced Culinary Arts II**Five Credits**

A continuation of T 3562 for students specializing in culinary arts as a baker or chef.

T 3564 Culinary Arts III**Three Credits**

This course emphasizes various grades of meats, cuts, and their uses under certain circumstances. The differences between primal and fabricated cuts are taught. Actual fabricating of meat cuts is taught. Actual fabricating of meat cuts is performed by the student.

T 3565 Advanced Culinary Arts III**Five Credits**

A continuation of T 3564 for students specializing in culinary arts as a cook or chef.

T 3566 Culinary Arts IV**Three Credits**

An introductory course in the preparation of meat and meatless entrees. The cooking of poultry, beef, pork, lamb, veal, and seafoods are taught as sub-sections in this course. The student will learn the basic entrees for each meal as well as the method of cooking by frying, baking, broiling and steaming. Short order cookery in the preparation of breakfasts and other meals which require quick preparation and service is also included. The student will concentrate on learning to work on a grill with speed and efficiency.

T 3567 Advanced Culinary Arts IV**Five Credits**

A continuation of T 3566 for students specializing in culinary arts as a cook or chef.

T 3568 Culinary Arts V**Three Credits**

This course teaches the types of stocks, the making of stocks, and their use in the preparation of soups and sauces. The derivatives from the sauces are emphasized. The student learns the important factors of blending flavors together and the artful skill of tasting the end product.

T 3569 Advanced Culinary Arts V Five Credits

A continuation of T 3568 for students specializing in culinary arts as a cook or chef.

T 3570 Culinary Arts VI Three Credits

In this course the student learns the techniques and methods of preparing, cooking and merchandising many varieties of vegetables. Both the vegetable and non-vegetable types of salads are taught in conjunction with vegetable preparation and merchandising. This course also covers appetizers, hors d'oeuvres and other cocktail tid-bits. The student is also given instruction in the handling of equipment used in this area of food preparation.

T 3571 Advanced Culinary Arts VI Five Credits

A continuation of T 3570 for students specializing in culinary arts as a cook or chef.

T 3580	Buffet Preparation and Service	Two Credits
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The difference between regular and classical buffet foods are discussed and prepared. Careful selections in combining foods for nutritional value along with creative abilities in decorative pieces and ice carvings are presented. Creative table display setups are arranged. Floral arrangements and eye-appealing layouts are the core in the presentation of this course.

T 3586 Internship for Restaurant Management Six Credits

Experiences in restaurant management under the direction of a qualified manager and the college supervisor. The student will become involved in processes such as customer relations, employer relations, front office procedures, housing management, food management, advertising, sales promotion and maintenance techniques.

V 4004 Office Skills and Procedures **One Credit**

Introduction to medical records, medical dictation, filing and indexing.

V 4005 Nursing Procedures for X-Ray Technicians **One Credit**

The basic knowledge of nursing procedures pertinent to x-ray technology.

- T 4007 Equipment Maintenance** **One Credit**
An understanding of x-ray machinery and the fundamentals of preventive maintenance.
- T 4010 Radiation Physics I** **Two Credits**
An introduction to the science of radiation physics essential for an understanding in the production of x-rays, including radiation protection.
- T 4011 Tomographic Anatomy** **One Credit**
This course is an introduction to the special procedure and anatomy of body section radiography.
- T 4013 Film Quality** **One Credit**
A lecture course presenting advanced information for the production of quality films.
- T 4014 Radiation Physics II** **Two Credits**
A continuation of Radiation Physics I. (T 4010)
- T 4015 Radiation Therapy** **Two Credits**
An introduction to assisting the radiologists with the radiation therapy necessary for treatment of tumors and all diseases requiring radiation therapy and the diagnostic value of radioactive isotopes.
- T 4020 X-Ray Techniques** **Three Credits**
The theory of x-ray exposure factors, which enables the student to correlate this knowledge to practical application, and acquaints the student with the care and handling of film and processing equipment.
- T 4030 X-Ray Clinical Practices I** **One Credit**
The actual application of classroom and laboratory learning in the affiliating hospital school including radiographic positioning.
- T 4031 X-Ray Clinical Practices II** **One Credit**
A continuation of T 4030.
- T 4032 X-Ray Clinical Practices III** **One Credit**
A continuation of T 4031.
- T 4033 X-Ray Clinical Practices IV** **One Credit**
A continuation of T 4032.

T 4034 X-Ray Clinical Practices V One Credit

A continuation of T4033.

T 4035 X-Ray Clinical Practices VI One Credit

A continuation of T 4034.

T 4036 X-Ray Clinical Practices VII One Credit

A continuation of T 4035.

T 4040 Principles of Radiographic Exposure I Two Credits

Radiographic Exposure I provides the student with a complete and thorough working knowledge of the manipulation of exposure factors.

T 4041 Principles of Radiographic Exposure II Two Credits

Radiographic Exposure II provides the student with an understanding of basic principles needed to construct charts for all situations and all technique ranges, and to acquaint the student with image intensification, cine, cameras, and TV systems.

T 4042 Principles of Radiographic Exposure III Two Credits

This section is devoted to the more refined radiographic exposures with emphasis on exposure factors for pediatric patients.

T 4050 Radiographic Positioning I Two Credits

This course provides the student with precise and detailed information of radiographic positioning of the structures and organs of the body.

T 4051 Radiographic Positioning II Two Credits

This section provides more precise and more detailed information of radiographic positioning.

T 4052 Radiographic Positioning III Two Credits

This section is more detailed positioning with the troublesome special positions the student may encounter in the second year, with emphasis on pediatric positioning.

T 4053 Radiographic Positioning IV Two Credits

This section is a more refined positioning. The student will be assisting the radiologists in a more professional capacity.

T 4054 Radiation Therapy Positioning V Two Credits

This section of positioning introduces the student to precise positioning of therapy patient in order for them to assist the radiologists.

T 4060 Film Critique I Three Credits

Introduces the student to constructive criticisms by the radiologists and instructors of x-ray films providing the student with the knowledge of quality x-rays, plus classes deemed necessary by the teaching supervisor and the College's teacher coordinator throughout the course.

T 4061 Film Critique II Three Credits

A continuation of Film Critique I (T 4060).

T 4062 Film Critique III Three Credits

A continuation of Film Critique II (T 4061).

T 4063 Film Critique IV Three Credits

A continuation of Film Critique III (T 4062)

T 4064 Film Critique V Three Credits

A continuation of Film Critique IV (T 4063).

T 4065 Film Critique VI Three Credits

A continuation of Film Critique V (T 4064).

T 4066 Film Critique VII Three Credits

A continuation of Film Critique VI (T 4065).

T 4080 Special Procedures I Two Credits

This course acquaints the student with specialized and highly technical procedures used in radiography.

T 4081 Special Procedures II Two Credits

This section provides the student with working knowledge of specialized and highly technical procedures and an introduction to the contrast media used by the physicians and radiologists.

T 4082 Special Procedures III Two Credits

This course provides the student with more refined procedures and an introduction to intraoral radiography.

T 4090 General Examination Review Two Credits

This section is a general review of all sections pertinent to the student's examination by the A.R.R.T.

T 4095 Departmental Administration I One Credit

A lecture course consisting of acquaintance with organization, function, supervision, and financial arrangements relative to departments of radiology.

T 4096 Departmental Administration II One Credit

The student's function with the radiology and administrative departments.

**T 4201 The Human Body: Structure
Function and Disease Three Credits**

A survey course to introduce the student to the anatomy and physiology of the body in health and disease.

T 4202 Anatomy and Physiology Four Credits

A study of the anatomy and physiology of the human body as an integrated unit, including basic principles, the cell, epithelial and connective tissues, the skeleton, muscular and nervous systems, and the study of the circulatory, respiratory, digestive, excretory, endocrine, and reproductive systems, and human development.

T 4210 Medical Terminology Two Credits

This course is designed to correlate with the terminology in T 4201 or T 4202 taken concurrently. Emphasis is placed upon learning the terms in their proper relationship to the anatomy of the body and the related diseases, anomalies and surgical procedures.

T 4211 Medical Linguistics Three Credits

This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

T 4220 Medical Ethics and Personal Health Three Credits

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

T 4230 Pharmacology**Three Credits**

Weights and measures in pharmacy. Techniques and skills in the safe and accurate preparation of oral and hypodermic doses of drugs. Action, dosage, usage, contraindications and special precautions to be taken in the administration of common drugs are included.

G 4301 Introduction to the Study of Disease Three Credits

To prepare the pre-clinical student to give good basic nursing care to patients with common disease conditions by giving them an understanding of the causes, symptoms, and the usual medical and/or surgical treatments for the condition.

T 4310 Fundamental Laboratory Techniques Four Credits

Elementary and basic skills encountered in the clinical laboratory. Identification of the role of the laboratory assistant in the clinical laboratory.

V 4311 Clinical Techniques I**Six Credits**

A study of laboratory techniques of hematology, chemistry, immunohematology, serology, routine analysis and bacteriology.

V 4312 Clinical Techniques II**Six Credits**

A continuation of V 4311.

V 4313 Clinical Techniques III**Six Credits**

A continuation of V 4312.

T 4314 Clinical Techniques IV**Six Credits**

A continuation of V 4313.

T 4315 Clinical Techniques V**Six Credits**

A continuation of T 4314.

T 4316 Clinical Techniques VI**Six Credits**

A continuation of T 4315.

V 4320 Clinical Applications I**Three Credits**

Applied practice in making reagents, using trip and analytical balances; calibrating colorimeter tubes; using standard curves, recoveries and control solutions; calculating standard deviation and confidence limits; checking all calculations; and performing urinalyses. Applied practice in the hospital hematology laboratory.

Experiences include patient contact, venipunctures, calibration of hemoglobin curve and hemoglobin and blood diluting pipettes, and duplication of findings of staff technologist on routine analyses of blood samples.

V 4321 Clinical Applications II Six Credits

A continuation of V 4320.

V 4322 Clinical Applications III Six Credits

A continuation of V 4321.

V 4323 Clinical Applications IV Two Credits

A continuation of V 4322.

V 4510 Nursing Techniques and Care I Six Credits

Basic principles and practices essential to the development of skills, attitudes and abilities that serve as foundations for safe patient care.

V 4511 Nursing Techniques and Care II Four Credits

Basic principles and practices essential to the administration of selected medications and assisting with advanced techniques and skills.

V 4520 Nutrition and Diet Therapy Four Credits

Principles of nutrition for all group and therapeutic diets.

V 4530 Medical Surgical Nursing I Four Credits

To prepare the student practical nurse with the skills and understanding necessary to assume her role on the health team responsibly and effectively in the area of Medical Surgical Nursing.

V 4531 Medical Surgical Nursing II Six Credits

A continuation of V 4530.

V 4550 Practical Nurse Clinical Experience I Five Credits

Clinical assignments in selected hospitals including medical and surgical nursing, care of the mother and newborn, care of the child, and diet therapy.

V 4551 Practical Nurse Clinical Experience II Six Credits

A continuation of V 4550.

V 4552 Practical Nurse Clinical Experience III Six Credits

A continuation of V 4551.

V 4560 Maternal and Child Health Six Credits

To prepare the student practical nurse with the techniques to meet the needs of both the mother and baby through understanding the maternity cycle of the mother, the growth, development and care of infants, and children in both health and illness.

V 4710 Operating Room Techniques I Six Credits

Surgical anatomy and terminology and surgical asepsis. Basic surgical techniques including preparation, surgical hand scrubs, gowning and gloving, care of operating room equipment. Positioning and draping of patients, care and use of suture material and surgical needles.

V 4711 Operating Room Techniques II Five Credits

A continuation of V 4710.

T 4720 Surgical Procedures I Three Credits

A study of the surgical anatomy, pathology and operative procedure for major general surgery, and operative procedures for orthopedic, eye, ear, nose and throat, neurosurgery; and obstetrical procedures, emergency room, and special diagnostic procedures.

T 4721 Surgical Procedures II Three Credits

A continuation of Surgical Procedures I.

T 4722 Surgical Procedures III Three Credits

A continuation of Surgical Procedures II.

V 4730 Clinical Applications I Four Credits

Experiences in cooperating hospitals in scrubbing and circulating for major and minor surgery, observing and assisting in selected diagnostic procedures.

V 4731 Clinical Applications II Four Credits

A continuation of V 4730.

V 4732 Clinical Applications III Four Credits

A continuation of V 4731.

T 4736 Surgical Anatomy **Three Credits**

This course is designed to extend the basic knowledge attained in Anatomy and Physiology and to correlate human anatomy with specific surgical areas.

T 4808 Medical Law and Economics **Three Credits**

An introduction to the manner in which the law effects the practice of medicine with familiarity in medical practice acts, legal relationships of physicians and patients, professional liabilities and the physicians' public duties and liabilities.

V 4820 Medical Assistants Nursing Techniques **Six Credits**

A familiarization of the Medical Assistant with preparing the patient for examination in the office, assisting the doctor, and care and preparation of sterile equipment.

**V 4840 Medical Assistants Laboratory
Technique** **Five Credits**

An introduction to various laboratory and x-ray procedures with emphasis on preparation of the patient for various procedures, their purposes, and the expected norms of results.

T 4852 Medical Office Procedures **Three Credits**

A course designed to provide a basic understanding of the duties and responsibilities in the offices of physicians and health care agencies. It includes medical correspondence and records, case histories of patients, filing, financial duties, correct contact procedures with patients, hospitals, and professional agencies, and desirable personality traits and attitudes for the medical office.

**V 4850 Medical Assistants
Clinical Experience I** **Two Credits**

Applied learning experiences in selected physicians' offices, clinics, and hospitals.

**V 4851 Medical Assistants
Clinical Experience II** **Two Credits**

A continuation of V 4850.

**T 6001 Personnel Management/Unit
Supervision** **Three Credits**

A management development course. The material covered is directed toward the responsibilities of any supervisor or potential supervisor

regardless of the position presently held. To permit him to function effectively, typical areas to be covered by classroom discussions and lectures include the responsibilities of the supervisor, functioning within an organizational structure, communications, job management, delegation of authority, interviewing, orientating and inducting new employees, training employees, work improvement and evaluation of employee performance.

T 6010 Safety Training and Fire Prevention Three Credits

A consideration of managerial and supervisory responsibility for fire and accident prevention, covering topics such as the preparation of accident reports, machine guarding, the use of personnel protective equipment, conformity to state industrial accident code and fire regulations, provision for first aid, the use of safety committees, and the methods of advertising and promoting a good safety and fire prevention program.

T 6012 Labor-Management Law Three Credits

The purpose of this course is to explore the development and application of the labor laws and practices that form the basis of modern-day industrial relations. Among the topics to be considered are the history and development of organized labor, Federal labor legislation, labor-management act, wage-hour laws, civil rights, state laws and regulations, local regulations, Federal pre-emption doctrine, National Labor Relations Board, Federal Mediation and Conciliation Service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances, and arbitration.

T 6034 Time and Motion Study Three Credits

This course covers the movements and time elements involved in manufacturing a product. Studies are made of both man and machine capabilities.

T 6052 Office Management Two Credits

A course to help prepare college-level students for supervisory and administrative positions in offices. The course provides instructions and procedures on information and records processing, communications, office services, and automated office equipment; the relationships of office functions, office services and office facilities. In addition, communications problems, as well as human relation principles relative to office personnel are discussed.

T 6309 Printing Production I**Six Credits**

Each student is given or selects production tasks in the graphic arts area. He practices the actual working procedure he will use in his prospective employment by drawing on previous instruction in the graphic arts program with the aid and guidance of the instructor.

T 6310 Art Processes**Three Credits**

Students become acquainted with art and printing processes as they may be used in internal industrial printing departments and by production advertisers. Jobs are accomplished in preparing illustration copy, special effects, line and halftone, and keyline drawing for four-color separations.

T 6311 Composition and Design I**Three Credits**

Deals with two-dimensional concept and shapes. Introduces the student to flat pattern design shapes. Gives him instruction in the use and mixing of color, with the varied techniques of color. Makes him aware of texture and value.

T 6312 Composition and Design II**Three Credits**

Will deal with the three-dimensional concepts of the visual image, color optics and color dynamics. Will deal with the illusion of 3D and the actuality of the 3D form and the use, limitations and physical manufacture of 3D forms for commercial use.

T 6313 Printing Production II**Six Credits**

A continuation of Printing Production I, T 6309.

T 6314 Printing Estimating**Six Credits**

A study of estimating of each individual part of a printing job, putting all together to come up with the entire cost of the job. The making out of requests for estimates for jobs and of estimate sheets for the customer are included. Such items as paper costs, type setting costs, press costs, and bindery costs are part of the course. The use of Franklin catalogs for letterpress and lithography is taught.

V 6315 Basic Drawing I**Three Credits**

Will develop basic drawing skills with the pencil and with charcoal. Will deal with the quality of line, the mass of volume, the control of values.

V 6316 Basic Drawing II**Three Credits**

A continuation of Basic Drawing I with further experience in the use of felt pens, chalks, conte crayon, pen and ink with the emphasis on the quality of descriptive sketching. Will show the difference between the sketch used as finished art and the sketch used as a layout for the illustration.

T 6318 Introduction to Illustration I**Three Credits**

An introduction course in media-watercolor, tempera, polymer and inks.

T 6323 Illustration II**Three Credits**

Concentration in the painting media with exploration of various techniques with the brush. Will show the value and advantage in using each technique and medium.

T 6324 Illustration III**Three Credits**

Concentrated work in black and white illustration with techniques in pen and ink, dry brush, chalks, designers colors, pencil with the use of mechanical materials. Some work in line-converted photos and their use. Will show the use of overlays in using a second, or more, color to black and white adwork.

T 6327 Illustration IV**Three Credits**

Techniques and handling of airbrush rendering and photo retouch. Will have experiences in both black and white and color. Extensive use of masking technique and supplementary brush work. Use of combined media.

T 6328 Illustration V**Three Credits**

The fifth course in illustration will be directed toward student interest in specific media. It will afford an opportunity to develop a proficiency in one area or possibly two.

T 6329 Life Drawing I**Three Credits**

A basic study of the undraped figure, its uses in the layout form and the finished art version. Will deal with the natural movements and positions of the figure. Will deal with the line figure versus the shaped figure.

T 6330 Life Drawing II**Two Credits**

The draped figure versus the undraped figure. The action of the figure upon clothing and the use of figure sketching to finished sketch and illustration.

T 6339 Layout Design I**Three Credits**

Will deal with the basic concepts of layout, how they relate to finished art and the use of various media and techniques of layout. Familiarization with the materials used.

T 6340 Layout Design II**Three Credits**

The emphasis will be upon the comprehensive layout and its relation to the finished printed brochure. All the efforts will be directed toward developing the student capacity for neat, well-designed layouts.

T 6345 Keylining I**Three Credits**

Analysis of requirements and practical lab work in the preparation of art and mechanicals for camera copy. A thorough indoctrination in methods and materials. A specific effort will be made to familiarize the student with typography and the spacing and selection of type.

T 6346 Keylining II**Three Credits**

This advanced course in keylining will concentrate on the practical preparation of keylines in relation to the printer. Classroom discussion will deal with practical consideration of keylining. Will define the responsibility of the artist and the printer in what is to be done by whom and which can best do it economically. Laboratory work will be concerned with producing accurate keylines ready for camera.

T 6350 Photography I**Three Credits**

A basic preparatory course in photographic fundamentals. Content covers the theory and practical applications of basic camera types. Picture taking, exposure determination, processing, and introduction to the media of the field are introduced.

T 6352 Photography II**Three Credits**

Advanced photo procedures.

T 6353 Photography III**Three Credits**

Photo procedures and their relations to the reproductive processes.

T 6374 Color Theory**Four Credits**

Topics covered include the nature of light, diffraction and absorption of light, sensation of color, pigment colors, the manufacture of pigments, mixing of pigments, and the Munsell system of color notation.

T 6375 Camera and Stripping**Three Credits**

In this course the student is given instruction and practice in camera operation and techniques. Most work is done in four colors. Production runs of special materials are accomplished.

T 6380 Graphic Techniques**Four Credits**

Fundamentals of lithographic stripping, mechanical drawing, typographical layout, opaquing, ruling and terminology understanding are emphasized. Offset applications are paramount in skill development. This course must be taken in concurrence with Copy Preparation and Proofreading (T 6382).

T 6381 Typography**Two Credits**

Introduction to type, what it is, sizes, different methods, spacing, line count, and lab experience in lettering type faces for layout.

T 6382 Copy Preparation and Proofreading **Five Credits**

Skills learned are applied to copy to be run on the offset press. Proofreading techniques and proof marks are introduced. The student learns to set up and operate the proofpress. This course must be taken in concurrence with Graphic Techniques (T 6380).

T 6388 Lithographic Press Operation I**Six Credits**

Demonstrations and practices provide the student with experience in making press adjustments such as bearer pressures, gripper adjustments, pressure adjustments, timing adjustments, proper plate and blanket packing, and a study of possible causes and cures of paper distortions. Through actual press operation, effectiveness of proper adjustments can be analyzed.

T 6389 Lithographic Press Operation II**Six Credits**

A continuation of Lithographic Press Operation I (T 6388).

T 6390 Lithographic Presswork**Six Credits**

Instruction on the mechanical operation of various offset presses. A practical study is made of feeder operations, conveyors, register systems, ink rollers, dampener adjustments, lithographic plate handling, the printing unit, and delivery systems on offset presses.

T 6400 Area Concentration**Three Credits**

Senior student's time is spent in concentrated effort on an area that he feels he wants to pursue. An outline of what he wants to accomplish for the course should be submitted.

V 6401 Blueprint Reading**Two Credits**

Instruction and practice in the study of working drawings and application of understandings from the "print" to the "work." Students will concentrate on the kinds of working plans analogous to the occupational interest area. Typical units will include relationship of views and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, schematic diagrams, welding symbols, sections, material symbols, material lists, architectural plates, room schedules, and plot plans.

V 6402 Related Drafting**Two Credits**

A practical course in basic skills of drafting related to the occupational area of the student.

V 6403 Drawing Fundamentals**Five Credits**

A practical course in the fundamentals of drawing. Basic skills are developed in the use of fundamental drawing equipment. Lettering, third angle projection, sectioning, beginning dimensioning, scale drawing, intersections, etc., are covered.

T 6404 Electronic Drafting Fundamentals**Four Credits**

This course introduces the basic principles of drafting and covers their application in relation to electronic drawings.

T 6405 Technical Drawing I**Six Credits**

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed.

T 6406 Technical Drawing II **Six Credits**

This course covers problems and projects involving multi-view and pictorial drawings. A portion of the course includes descriptive geometry.

T 6407 Technical Drawing III **Six Credits**

This course covers detail and assembly drawings, stock lists, springs, weldments, and catalog items.

T 6408 Technical Drawing IV **Six Credits**

This course covers basic jigs and fixtures, bearings, gears and cams and methods of precision measurements.

T 6409 Technical Drawing V **Six Credits**

This course covers design of cutting tools, electrical and piping diagrams, special machines and the finished product.

T 6410 Technical Drawing VI **Six Credits**

This course covers the planning and designing of dies, including piercing and forming, die cast and plastic mold dies.

V 6411 Blueprint for Machinists **Two Credits**

Typical units will include: relationship of views and details, interpretation of dimensions, transposing scale, tolerances, symbols, schematic diagrams, sections, material symbols and material lists as related to machine trades.

V 6412 Blueprint for Tool and Die **Two Credits**

Typical units will include: relationship of views and details, interpretation of dimensions, transposing scale, tolerances, symbols, schematic diagrams, sections, material symbols and material lists as related to tool and die.

T 6420 Architectural Drawing I **Six Credits**

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed.

T 6421 Architectural Drawing II **Six Credits**

This course covers problems and projects involving multi-view and pictorial drawings. A portion of the course includes descriptive geometry.

T 6422 Architectural Drawing III **Six Credits**

This course covers the planning and design of a residence including size, space relationships and costs. A complete set of working drawings shall be the objective.

T 6423 Architectural Drawing IV **Six Credits**

This course covers the planning and design of a motel including size, space relationships and costs. A complete set of working drawings shall be the objective.

T 6424 Architectural Drawing V **Six Credits**

This course covers the planning and design of a school including size, space relationships and costs. A complete set of working drawings shall be the objective.

T 6425 Architectural Drawing VI **Six Credits**

In order to provide an atmosphere of "the world of work," teams of students complete a set of working drawings. A job captain is chosen from among the most deserving students. This design includes commercial, light industry, or office building design as approved by the instructor.

T 6428 Mechanical & Electrical Equipment **Three Credits**

This covers the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied.

T 6430 Building Materials & Applications **Three Credits**

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

T 6432 Architectural Renderings **Two Credits**

Presentations are made using pictorial drawings, scale models, color and material schemes.

T 6434 Estimating**Two Credits**

A study to approximate the cost of a product by estimating time, material, equipment, labor, overhead and profit involved.

T 6436 Structural Design**Three Credits**

This course covers statics and strength of materials. Vectors, stress, strain and the elasticity of materials will be considered in the basic structural design problems.

T 6437 Contracts & Specifications**Three Credits**

This course covers contracts and specifications as they relate to plans, building codes and actual construction. Basic relationships between specifications and working drawings will be considered from a legal and working standpoint.

T 6439 Architectural History**Three Credits**

The study of architectural development, past and present, in terms of the influence wielded by environment and culture.

T 6444 Surveying & Measurements**Two Credits**

This course covers the proper use and care of basic surveying equipment, including the level and transit. Field problems will be recorded in field notebooks and translated into records and drawings.

T 6462 Statics**Three Credits**

This course is designed to develop a knowledge of the underlying principles of analytical mechanics and understanding of the basic laws of statics and dynamics. The study of the geometry of motion (kinematics), and the study of the forces required to produce motion (kinetics) is involved. Study is made of the internal stresses and deformation of elastic bodies resulting from the action of external forces. Emphasis is given to the analysis of the simple and combined stresses and properties of materials to meet the functional requirements in design. In this course, strength of such elements as riveted joints, beams, columns, shafts, and keys are determined.

T 6464 Mechanisms**Three Credits**

This course covers the use of cams, gears, bearings, pawl and ratchets, linkages, and drive trains producing rotary, reciprocating or oscillating motion. Space requirements and velocity factors are included.

T 6466 Strength of Materials**Three Credits**

Covers a thorough analysis of the fundamental concepts of mechanics as applied to machine parts, structures, beams and columns as well as developing an understanding of testing techniques and acquainting the student with the strength of various materials and the method of testing.

T 6478 Layout and Inspection**Three Credits**

Terms such as tolerance, fits, allowances, interchangeability, etc. are considered in their relationship to inspection procedures. Production inspection is covered in depth with the introduction of gage inspection where applicable.

T 6479 Hydraulics & Pneumatics**Two Credits**

This course covers fundamentals of fluid power and air pressure. Principles, functions, terminology and repair are studied.

T 6481 Manufacturing Processes I**Three Credits**

This course covers basic materials and the machines that perform the following processes: rolling, forming, casting, molding, machining, welding, heat treating, plating, and tape controlled machines.

T 6482 Manufacturing Processes II**Three Credits**

A study of manufacturing methods and foundry practice, including an introduction to die casting; aluminum extruding, forging, stamping, and forming; plastic extruding; compression and transfer molding; hot and cold metal working; transfer equipment; and basic principles of automation.

V 6490 Machine Design Principles**Two Credits**

Machine design principles are taken up in this course. Emphasis is placed on the control, devices, dimensions, electrical, hydraulic, mechanical components, design aids, and functions related to machine products.

T 6496 Basic Machining**Three Credits**

This course covers the operations of the following machines: lathes, boring mills, drill presses, milling machines, shapers, planers, broaches and grinders. Their performance in the proper operational sequences, including the required tooling is studied.

T 6497 Design Problems**Three Credits**

This course covers typical job situations including group participation at the instructor's choice. This shall possibly include the redesign of existing products or the design of new products or concepts.

T 6499 Quality Control**Three Credits**

This course covers the principles and techniques of quality control. Other topics covered include vendor-customer relationships, sampling inspections, process control and tests for significance.

T 6502 Electricity**Four Credits**

This course is a study of the most basic concepts required of the electrical worker. Particular emphasis is placed on the concept of series circuits, parallel circuits, series parallel combination circuits and Ohm's Law. The basic definitions of electromotive force, current and resistance, receive special attention.

V 6505 AC/DC Fundamentals**Seven Credits**

Alternating and direct current theory and practice are covered. Ohm's Law, meters, batteries, generators, power systems, and transformers are stressed.

V 6506 Electronics I**Six Credits**

Electronics I provides the student with the most basic concepts required of the electronics worker. Particular emphasis is placed on concepts of series circuits, parallel circuits, series-parallel combinations circuits, soldering techniques and assembly as it applies to the beginning electronics student.

V 6507 Electronics II**Six Credits**

Materials to be covered include basic principles of alternating current, mathematics for AC applications, vectors, phase relation; inductive reactance and impedance; capacitive reactance and impedance, alternating current circuits, AC circuit analysis, motors and generators—AC, AC power systems, resonance in series circuits, resonance in parallel circuits, transformers, theory and application.

V 6508 Electronics III**Six Credits**

The construction of bread boards, basic lab techniques and use of test equipment will be taught. Materials to be covered include rectification and detection, diodes, amplification, oscillation, vacuum tube and semi-conductor characteristics and curves, tuned circuits.

T 6509 Electronics IV**Six Credits**

Materials to be covered include power supply circuits, basic amplifiers, basic oscillator circuits, audio systems, AM and FM transmitters and receivers.

T 6512 Electronics V**Six Credits**

Materials to be covered include non-sinusoidal waveshapes; multivibrators and flip-flop circuits; special oscillator circuits; blocking, shock-excited, wave shaping circuits, clippers, limiting circuits, clamp circuits, counters, television transmitters, television receivers.

T 6513 Electronics VI**Six Credits**

This course will take the components and simple, new work which the student has been exposed to and show how they are combined to form systems used in industry. The function of timed circuits, deletion, counting circuits and motor control circuits, will be covered. Material to be covered include time delay circuits, voltage regulation and industrial rectifiers, industrial control devices—tubes and semiconductors, motors and generators, electronic motor controls, photoelectric circuits and controls, resistance welding controls, high frequency applications—induction heating, X-Ray, numerically controlled machines, synchro motors and control systems, servo control devices and systems, microwaves and radar in industrial applications.

**V 6514 Vacuum Tube and Semi-Conductor
Fundamentals** **Seven Credits**

The construction of bread boards, basic lab techniques and use of test equipment will be taught. Materials to be covered include rectification and detection, diodes, audio amplification, oscillation, vacuum tube and semi-conductor characteristics and curves and tuned circuits.

**V 6515 Vacuum Tubes and Semi-Conductor
Applications** **Seven Credits**

Materials to be covered include power supply circuits, basic amplifiers, basic oscillator circuits, audio systems, FM transmitters and receivers.

T 6527 Solid State I **Five Credits**

The student is introduced to the theory and application of solid state devices.

T 6528 Solid State II **Five Credits**

Solid State II is a continuation of Solid State I. With emphasis placed on amplifiers, switching circuits and special applications.

T 6529 Solid State III **Five Credits**

Solid State III is a continuation of Solid State II, with special emphasis on logic circuits, binary and octal numbers, binary code, and Boolean algebra.

V 6540 Troubleshooting Techniques I **Three Credits**

Course concerned with the techniques of trouble shooting electronic circuits and simple systems. Emphasis will be placed on signal tracing and signal injection methods.

V 6541 Troubleshooting Techniques II **Three Credits**

A continuation of trouble shooting techniques. This course will emphasize signal injection and signal tracing in more complex electronic systems. Emphasis will be placed on location malfunction, replacing black boxes, then repairing black box circuits.

V 6542 Electronic Shop Processes I **Two Credits**

This course is designed to introduce the student to the use of common hand tools, test equipment and other general instruments used in the installation and construction of electronic equipment. Emphasis will be placed on reliable electrical connection techniques, wiring, lacing and chassis layout and construction.

V 6543 Electronic Shop Processes II Three Credits

A course concerned with the actual layout, building, trouble shooting and testing of simple electronic devices, such as power supplies and one or two stage amplifiers. The object of this course is to increase the student's knowledge of the theory, construction and design of electronic equipment and to allow him to acquire sufficient mechanical skill to successfully install, repair and construct equipment.

V 6602 Automotive Mechanics I Seven Credits

Basic theory and principles of automobiles are studied including tune-up and carburetion, brakes and steering, balancing and alignment.

V 6603 Automotive Drawing Interpretation Three Credits

A course which is designed to develop a student's ability to interpret automotive drawings, to make functional working sketches, and to understand the relation between drawings, basic trade theory, and shop operations. The instruction applies to engine assembly, cooling system, oil lubrication system, fuel system, frames and front end, clutch assembly, transmissions, rear-end assembly, brake assembly, and lubrication and electrical systems.

V 6604 Automotive Mechanics II Seven Credits

Diagnosing and repair of auto engines is emphasized including electrical systems.

V 6605 Tune-up and Carburetion Six Credits

The operational principles of the automotive engine and the components that support good performance are studied. The laboratory is used for diagnosis and evaluation. Carburetion principle and repair of various types of carburetors is covered as part of this course.

V 6606 Automotive Mechanics III Seven Credits

A continuation of the study of engines plus clutches, transmissions, and differentials and drive lines.

V 6607 Automobile Engines II Six Credits

This one quarter course is designed to familiarize students with tools, machines and equipment needed for the rebuilding of the automotive internal combustion engine. Theory, construction, design, diag-

nosis, disassembly, repairing, testing, and reassembly are stressed throughout the course. Emphasis is placed on work skills and proficiency throughout the laboratory practices.

V 6609 Brakes and Steering

Four Credits

A study of the fundamentals of mechanical, hydraulic, and self-adjusting brakes. The fundamentals of manual and power steering are taught. Much of the course is in the trouble shooting and service area using the manufacturer's manual as a guide.

V 6611 Balancing and Alignment

Three Credits

Covers the basic principle of balancing and alignment, the role they play in auto operation and their importance in operation. Considerable time is devoted to alignment (front end—entire auto) and the use of alignment equipment.

V 6612 Related Automotive Mechanics I

Four Credits

This course is designed to provide an auto body repair student enough auto mechanics knowledge to enable him to work effectively on the body.

V 6613 Clutches and Transmissions

Five Credits

Operational principles of clutches, standard and automatic transmissions are studied. Emphasis is placed on diagnosis, repair, testing, and maintenance procedures, through the use of recommended manufacturing procedures.

V 6615 Differentials and Drive Lines

Five Credits

The theory, operation, repair, and trouble shooting on drive lines and axle assemblies are taught. Emphasis is placed on skill in correction of the problems common to differentials, drive lines, and axles.

V 6617 Electrical Systems

Four Credits

The principles of electrical systems used in the automotive industry are studied. The detailed operation and repair of batteries, starters, distributors, generators, alternators, and regulators are observed and practiced in the laboratory. Emphasis is placed on the diagnosis and repair of the auto ignition system including transistorized components.

T 6630 Solid State IV**Five Credits**

This course brings together many applications of the basic digital electronics and transistor fundamentals learned in solid state courses to date. Basic electronic counters, special counters and registers, and magnetic devices are examined.

V 6632 Automotive Body I**Seven Credits**

An introduction to automotive body and frame work.

V 6633 Automotive Body II**Seven Credits**

A continuation of Auto Body I. Work is done on actual fenders, doors, trunk lids, and hoods. Each part is removed, repaired, masked, painted, and reassembled. Instruction is given in the principles of each operation and use of each tool or machine. Portable power tools and safety are emphasized. Alignment of doors and other openings are covered as a part of reassembly. Skill and speed in performing the tasks are carefully checked.

V 6634 Automotive Body III**Seven Credits**

A continuation of Auto Body II. Preparation is made for repairing major wrecked automobiles. Procedures of repairing the frame and alignment of the wheels and axles are studied prior to performing the tasks on wrecked autos. Repair and replacement of roofs, quarter panels, windshield pillar posts, hinge and center posts, doors and rocker panels, trunk lids, and tailgates, and restoring of total wrecks are taught.

V 6640 Related Automotive Body I**Four Credits**

Welding of metals, metals forming, automotive body and frame structure, repairing principles, and safety practices are studied.

V 6650 Introduction to Diesel Service**Four Credits**

An introduction to the operational principles and servicing of diesel engines. Limited laboratory experience provides the support the theory covered.

V 6662 Automotive and Diesel Service**Three Credits**

An understanding of the role and function of an automotive service manager is covered. The responsibility of each member of the staff and the procedures of completing the servicing of customer's automobiles and diesels. The laboratory facilities provide the opportunity to get limited practice.

V 6664 Parts Department Practice **Four Credits**

An opportunity to study the procedures for supplying, ordering, cataloging parts is offered.

T 6716 Thermodynamics **Three Credits**

The course covers the basic theory of thermodynamics, which deals with the study of energy, energy transfer, and the media employed for the transfer of energy. The theory is coordinated with engineering practices and will show the theory of operation of internal-combustion engines, air compressors, steam engines, and turbines.

V 6801 Introduction to Machine Shop **Three Credits**

Selected operations are used to develop some skill and understanding in the use of basic machine tools as they apply to the related trade.

V 6802 Basic Machine Shop **Six Credits**

A course designed to introduce students to machines, techniques and processes.

**V 6803 Interpretation of Technical
Diagramming and Tables** **Three Credits**

Skills are developed to the point where the student can diagram systems and controls satisfactorily for understanding and interpretation, common templates and simplified methods are stressed where possible. Mathematical tables are emphasized.

T 6840 Machine Processes **Five Credits**

An advanced course designed to introduce students to new machine developments, techniques, and processes. Consideration of material and accuracy requirements as they relate to new products and machines will enable the student to select the proper machining sequence for economy and precision.

V 6851 Mechanical and Process Lubrication **Three Credits**

A study of all methods and processes of lubrication of machines. Diagnosing and repair are stressed.

V 6852 Machine Repair I **Four Credits**

The learner is instructed in the skills of machine tools commonly used to produce new and reconditioned parts for machines under repair. Proficiency is gained in the use of basic machine tools in repairing work and damaged components of machine tools in repair.

V 6853 Machine Repair II **Four Credits**

Advanced skills are developed in machine repair. Students work on assigned repair problems as a group with individuals assuming responsibility for a specific part of the job.

V 6860 Diagnosis and Repair I **Four Credits**

A practical application course in industrial wiring methods and design including circuit and conductor calculations, motor circuits and controls, transformer and entrance layouts, illumination design, heating and air-conditioning, machine tool hook-up and circuiting. The National Electrical Code is introduced as it applies to the field.

V 6861 Diagnosis and Repair II **Four Credits**

Projects and actual installation and trouble shooting of live work are used to strengthen the basic skills previously learned. Group activities emphasize the team approach to problem areas.

V 6865 Industrial Hydraulics **Four Credits**

The fundamentals of fluid power and the components are covered as to principle, function, terminology, repair and use. Study of machine tool circuits is used to make application.

V 6881 Tool and Die Making I **Seven Credits**

An introduction to machine tools, their design, applications, tooling, set up and operation with specific emphasis on the latest developments in high speed and high production of metallic and non-metallic parts including numerically controlled automated machinery.

V 6882 Tool and Die Making II **Seven Credits**

A study of manufacturing methods and foundry practice, including an introduction to die casting; aluminum extruding, forging, stamping, and forming; plastic extruding; compression and transfer molding; hot and cold metal working; transfer equipment; and basic principles of automation.

V 6901 Welding for Related Trades I **Five Credits**

An introduction to the area of arc and oxy-acetylene welding. The fundamental principles of joining ferrous metals are studied and demonstrated. Basic welding processes, equipment operation, and safety procedures are practiced in the laboratory work. Emphasis is given to welding procedures and practice in the major area of work such as machine shop, automotive, and sheet metal.

V 6902 Welding for Related Trades II **Five Credits**

A continuation of Welding for Related Trades I (V 6901)

V 6910 Welding I **Seven Credits**

To provide the opportunity for each student, in a general and comprehensive way, to learn the electric arc welding processes and to give each student a basic understanding of the principles involving safety, machines, electrodes, and metals.

V 6911 Welding II **Seven Credits**

To expose the student to a knowledge of how to weld metals and alloys, understand the mechanical properties of steel and alloys, also to understand expansion, contraction, and shrinkage of metals, and study the sizes of welds and their strength.

V 6912 Welding III **Seven Credits**

To provide the student with a comprehensive view of all welding processes, historical background, fundamentals of the process, equipment, applications and economics of each process.

V 6942 Welding Troubleshooting **Four Credits**

Construction, operation, maintenance, and troubleshooting of welding equipment will be covered. Evaluation of welding procedures and analyzing of the problems. Recommendations and testing for improved welds.



INDEX

A

Acetylene welding	58
Accounting	40, 77-79
Accounting clerical	40
Accounting technician	40
Admission, requirements and procedures	24-25
Administrative office	7
_____, officers	8
_____, staff	8
Advertising	84
Advisory committees	30
Agricultural business technician	37
Agricultural equipment technician	37-38
Agricultural technology	36-38
Agriculture	36-38, 71-74
Agriculture clerk	38
Air conditioning service	58
Anatomy	88, 95
Appliance repair	58
Apprenticeship programs, certified	59-60
Architectural drafting technician	46
Arc welding	58, 114
Art, commercial	45
Assistance, tutorial	28
Automobile body repairman ..	56
Automatic transmission service	58
Automotive body	39, 111
Automotive mechanics	39, 55, 109-110
Automotive technician	38-39

B

Biochemistry	69, 71
Blue print reading	101
Board of trustees	5
Book store	23
Business machines	75
Business technology	39-48

C

CLA	52
-----------	----

Calendar	16-18
Certified apprenticeship programs	59-60
Certified laboratory assistant	52
Chemistry	68-69, 71
Clerical, accounting	40
Clerical secretarial	45
College credit	26
Commercial art technician ...	45
Commercial art technology ...	45
Communication skills	65
Composition	97-98
Computer operator	42
Computer programming	81
Conduct	33-34
Continuing education	31-32, 61
Counseling service	27-28
Course descriptions	65-114
Credit, college	26-27
Credit procedure	83
Culinary arts	85-86
Curricula, description	36-59
Curriculum, advisory committees	30
Curriculum and graduation requirements	30-32
Custodial service	58

D

Data processing	41-42, 80-82
Data processing technician	41-42
Deferrment, selective service	32
Diesel	111
Drafting and design technologies	46, 47
Degrees	30-32
Design technology	46-47
Dictation	75-77
Drawing	97-103

E

Economics	69
Education, general	36
Electronics technician	48
Electronics technology	47-48, 106-109

Engines, small gas	58
Equivalency, high school	28
Evening college	26
Executive secretarial	44
Expenses	20-21

F

Faculty	12-15, 29
Fees	20, 58
Filing	76
Financial assistance	21-23
Fluid power	58
Food management	48, 85

G

Gas engines, small	58
GED	28
General education core	36
General educational development test program	28
General information	20-34
Grading system	29
Graduation, requirements ..	30-32
Graphic arts	49, 97
Graphic arts technician	49
Graphic arts technology	49

H

Health occupations ..	50-55, 87-95
Health, personal and community	69
High school equivalency test program	28
Hospitality careers	84-87
Housing and transportation ..	24
Human relations	70
Hydraulics, industrial	113

I

Illustration	97-98
Industrial electrician	56
Industrial marketing	43
Inhalation therapy technician	55
Institutional foods management	48
Institutional foods service assistant	48
Ivy Tech, personnel	5, 8-15

_____ regional institutes	6- 7
_____ calendar	16-18

K

Keypunch operator training ..	58
-------------------------------	----

L

Labor law	96
Law, business	80
Law, criminal	80
Legal secretarial	44
Loans, guaranteed student	23
Location of programs of study	62-63

M

MDTA	22
Machine tool repairman ..	57, 113
Machinery	106, 112
Machinist, tool and die	57-58
Management technician	42
Manufacturing drafting technician	47
Marketing	42-43, 84
Marketing clerk	43
Marketing, industrial	43
Marketing, retail	43
Marketing technician, industrial and retail	42-43
Mathematics	65-68
Mechanical engineering technician	49
Mechanical engineering technology	49
Medical assistant	53-54
Medical laboratory assistant ..	52
Medical secretarial	44
Menu planning	84
Microbiology	68
Mig welding	58, 114

N

Nutrition	85, 91
Nursing	87, 93-94

O

Occupational experience	71, 74, 82
----------------------------------	------------

Occupational research	70
Office practice and management 77, 83, 87, 95, 96	
Officers	8
Oil burner service	58
Operating room technician	53
Operating room techniques ..	92
Outboard motor service	58

P

Part-time vocational courses	58-59
Parts management	112
Personality development	71
Personnel, Ivy Tech	5, 8-15
Personnel management	95
Pharmacology	92
Photography	99-100
Physics	69, 88
Placement	32
Philosophy	19-20
Power, fluid	58
Practical nursing	54, 87, 93
Printing	97, 100-101
Programs of study, location	62-63
Psychology	70
Purchasing	83

R

Radiation therapy	88
Radio and television repairman	48
Radiologic technologist	51
Radiologic technology	50-51
Recognition	30
Recreation	33
Regional technical institutes	6-7
_____, staff	9-12
_____, faculty	13-15
Requirements, curriculum and graduation	30-32
Restaurant management	87
Retail marketing	43

S

Safety	96
Secretarial	43-45, 75-77
Secretarial technician	43-44
Selective service, deferrment	32
Semi-technical programs	31, 55-58

Shorthand	76
Small gas engines	58
Sociology	71
Staff	8-12
Statistics	68
Student government	32-33
Supervision	95
Surgical procedures	92
Systems analysis	82

T

Technical degree	31
Television repairman	48
Testing	27-28
Thermodynamics	67
Tig welding	58, 114
Time and motion study	96
Tool and die	113
Tool and die machinist	57-58
Transfer credit	26-27
Transmission (automatic), service	58
Transportation	24
Trustees	5
Tutorial assistance	28
Typing	74-75

U

Upholstering	58
--------------------	----

V

Veterans information	21-22
Vocational courses, part-time	58-59
Vocational service trade programs	58-59

W

Welder	58
Welding	58, 114
Welding, acetylene, arc, tig and mig	58
Withdrawals	21
Work-study	22-23
World of work	70

X

X-Ray	88-89
-------------	-------



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